Vol. 1043 Number 3

OFFICIAL GAZETTE

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June 19, 1984

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1042 O.G. 45 on May 15, 1984.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced in the *Official Gazette* at 1039 O.G. 142 on Feb. 21, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

Apr. 13, 1984.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,313,560, Re. S.N. 576,144, Filed Feb. 2, 1984, Cl. 236/46, CONTROL SYSTEM FOR ENVIRONMENTAL UNITS, Jack L. Stiles, Owner of Record: *Inventor,* Attorney or Agent: W. Thomas Timmons, et al., Ex. Gp.: 344

4,365,033, Re. S.N. 596,128, Filed Apr. 2, 1984, Cl. 524/118, FLAME-RETARDANT POLYMER COMPOSITIONS CONTAINING METAL OR AMINE SALTS, Yuval Halpern, Owner of Record: *Borg-Warner Chemicals, Inc., Parkersburg, W. Va.,* Attorney or Agent: Richard J. Schlott, et al., Ex. Gp.: 153

4,365,033, Re. S.N. 596,129, Filed Apr. 2, 1984, Cl. 524/118, FLAME-RETARDANT POLYMER COMPOSITIONS CONTAINING METAL OR AMINE SALTS, Donna Mott, Owner of Record: *Borg-Warner Chemicals, Inc., Parkersburg, W. Va.,* Attorney or Agent: Richard J. Schlott, et al., Ex. Gp.: 153

4,374,822, Re. S.N. 593,070, Filed Mar. 26, 1984, Cl. 424/49, ORAL COMPOSITION, Ralph Fine, et al., Owner of Record: *Colgate-Palmolive Co., New York, N.Y.,* Attorney or Agent: Herbert S. Sylvester, Ex. Gp.: 123

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

D. 255,480, Reexam. No. 90/000,552, Requested: May 7, 1984, Cl. D23, PUMP BASKET STRAINER, Steven A. Zieg, Owner of Record: *Purex Corp., Lakewood, Calif.,* Attorney or Agent: William W. Haefliger, Ex. Gp.: 290, Requester: Owner

Plt. 3,971, Reexam. No. 90/000,557, Requested: May 16, 1984, Cl. Plt/88, NEOREGELIA PLANT, Paul de Coster, et al., Owner of Record: *James E. Harvey, Gotha, Fla.,* Attorney or Agent: Donald D. Jeffery, Ex. Gp.: 337, Requester: Kerry H. Herndon c/o Kerry's Nursery, Inc., Homestead, Fla.

3,835,464, Reexam. No. 90/000,553, Requested: May 8, 1984, Cl. 340/710, POSITION INDICATOR FOR DISPLAY SYSTEM, Ronald E. Rider, Owner of Record: *Xerox Corp., Stamford, Conn.,* Attorney or Agent: Ronald Zebelli, Ex. Gp.: 260 Requester: Alps Electric Co., Ltd., Tokyo, Japan

3,935,917, Reexam. No. 90/000,551, Requested: May 7, 1984, Cl. 180/53, HYDRAULIC PUMP CONTROL SYSTEM, James M. Eley, et al., Owner of Record: *Dana Corp., Toledo, Ohio,* Attorney or Agent: Robert L. Harmon, Ex. Gp.: 310, Requester: Owner

4,047,197, Reexam. No. 90/000,561, Requested: May 21, 1984, Cl. 357/081, HOUSING AND LEAD STRUCTURE FOR A SERIES CONNECTED SEMICONDUCTOR RECTIFIER ARRANGEMENT, Winfried Schierz, Owner of Record: *Semikron Gesellschaft Fur Gleichrichterbau Ung Elektronik M.b.H., Nurnberg, Germany,* Attorney or Agent: Spencer and Kaye, Ex. Gp.: 253, Requester: Owner

4,164,290, Reexam. No. 90/000,555, Requested: May 14, 1984, Cl. 214/1BD, AUTOMATIC TOOL CHANGER FOR MACHINE TOOLS, Frank Zankl, Owner of Record: *Kearney & Trecker Corp., West Allis, Wis.,* Attorney or Agent: Cyril Hajewski, Ex. Gp.: 310, Requester: Owner

4,272,119, Reexam. No. 90/000,559, Requested: May 18, 1984, Cl. 296/100, VEHICLE COVER ASSEMBLY, Robert M. Adams, Owner of Record: *Inventor,* Attorney or Agent: Bernard & Brown, Ex. Gp.: 312, Requester: Performance Marketing, Santa Ana, Calif.

4,367,157, Reexam. No. 90/000,550, Requested: May 2, 1984, Cl. 256/102, SOFT CONTACT LENS AMBIENT TEMPERATURE DISINFECTANT SOLUTION CONTAINING ASCORBIC ACID OR SALT THEREOF, Guy J. Sherman, Owner of Record: *Sherman Laboratories, Inc., Tammany, La.,* Attorney or Agent: Winburn & Gray, Ltd., Ex. Gp.: 150, Requester: Gordon W. Hueschen, Kalamazoo, Mich.

4,377,847, Reexam. No. 90/000,554, Requested: May 14, 1984, Cl. 364/400, MICROPROCESSOR CONTROLLED MICRO-STEPPING CHART DRIVE, Richard A. Daniel, et al., Owner of Record: *Gould, Inc., Rolling Meadows, Ill.,* Attorney or Agent: John R.

Garrett, Ex. Gp.: 230, Requester: Western Graphtec, Irvine, Calif.

4,427,126, Reexam. No. 90/000,560, Requested: May 21, 1984, Cl. 215/307, VENTED CLOSURE, Ofrem M. Ostrowsky, Owner of Record: *Ethyl Molded Products Co., Richmond, Va.,* Attorney or Agent: John F. Sieberth, Ex. Gp.: 241, Requester: Ethyl Molded Products Co., Baton Rouge, La.

4,438,584, Reexam. No. 90/000,558, Requested: May 18, 1984, Cl. 043/058, TRAP FOR RATS, MICE AND OTHER VERMIN, Stanley Z. Baker, et al., Owner of Record: *Requester,* Attorney or Agent: Body, Vickers & Daniels, Ex. Gp.: 325, Requester: J. T. Eaton & Co., Inc., Twinsburg, Ohio

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Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,616,356, Clarence H. Roy, ELECTROLYSIS IN A PARTICULATE CARBON PACKING; **4,310,406,** Avery B. Smith, APPARATUS FOR REMOVING METAL IONS AND OTHER POLLUTANTS FROM AQUEOUS SOLUTIONS AND MOIST GASEOUS STREAMS, **filed** Jan. 28, 1977, D.C. Conn. (New Haven), Doc. N 77-29, *Clarence H. Roy* v. *Avery B. Smith, et al.*

3,783,083, Monarch Marking Systems, Inc., COMPOSITE WEB OF PRESSURE SENSITIVE LABELS; **3,852,139, same,** METHOD OF DISPENSING LABELS; **3,852,140, same,** METHOD OF MAKING COMPOSITE WEB OF LABELS; **3,878,783, same,** LABEL PRINTING AND APPLYING APPARATUS; **4,173,293, same,** COMPOSITE LABEL WEB AND METHOD OF USING SAME; **4,227,457, same,** INKING MECHANISM; **4,274,902, same,** METHOD OF DISPENSING LABELS; **D. 241,074, same,** INK ROLLER, **filed** Apr. 27, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 2599; *Monarch Marking Systems, Inc.* v. *Duncan Parking Meter Maintenance Co., Inc., et al.*

3,802,555, Abbott Laboratories, SURGICAL INSTRUMENT PACKAGE AND HANDLING PROCEDURE, **filed** Mar. 4, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 1184, *Abbott Laboratories* v. *American Hospital Supply Corp., et al.*

3,808,340, Kal Kan Foods, Inc., MEAT COATED PRODUCT, **filed** Mar. 13, 1981, D.C., C.D. Calif. (Los Angeles), Doc. 81 1234, *Star-Kist Foods, Inc., et al.* v. *Mars, Inc. and Kal Kan Foods, Inc.*

3,810,409, Allen and McGuire, BANDMILL STRAIN MECHANISM; **3,838,620,** Baldrey and Allen, AIR STRAIN MECHANISM FOR BANDMILL; **3,946,634,** Allen and McGuire, BAND MILL STRAIN MECHANISM, **filed** Sept. 9, 1981, D.C. Ore. (Portland), Doc. CV 81-822PA, *Kockums Industries, Ltd.* v. *Salem Equipment, Inc.*

3,816,745, Innovation Industries, Inc., OPTICALLY-COUPLED SENSING AND CONTROL SYSTEM, **filed** Mar. 6, 1984, D.C., E.D. Ark. (Little Rock), Doc. LR-C-84-237, *Innovation Industries, Inc.* v. *Ray Primm Industries, Inc., et al.*

3,833,303, Bausch and Lomb, Inc., MEASURING APPARATUS USING THE MOIRE FRINGE CONCEPT OF MEASUREMENT, **filed** Mar. 2, 1984, D.C.N.J. (Newark), Doc. 84-806, *Bausch and Lomb, Inc.* v. *Mitutojo Mfg. Co.*

3,834,052, W. R. Weaver Co., MOUNT FOR GUNSIGHT, **filed** Jan. 8, 1979, D.C., N.D. Ind. (Ft. Wayne), Doc. F 79-0003, *James Van Holten* v. *W. R. Weaver Co.* Defendant is the owner of Pat. No. 3,834,052 which is valid and subsisting in law. Consent Judgment filed Feb. 29, 1980.

3,837,292, A. Stucki Co., HYDRAULIC TRUCK SNUBBER, **filed** Nov. 4, 1983, D.C., E.D. Pa. (Philadelphia), Doc. 83-5340, *A. Stucki Co.* v. *Stuart A. Schwam, et al.*

3,837,703, Forrest Holladay, GLARE SHIELDS, **filed** Dec. 29, 1981, D.C., E.D. Mich. (Detroit), Doc. 81-74823, *Forrest Holladay* v. *Sun Shields, Inc.*

3,837,821, L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation Des Procedes George Claude, ELEVATING NATURAL GAS WITH REDUCED COLORIFIC VALUE TO DISTRIBUTION PRESSURE, **filed** Nov. 18, 1983, D.C., S.D. Ga. (Savannah), Doc. CV483-502, *L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation Des Procedes George Claude* v. *Southern Natural Gas Co., et al.*

3,838,620. (See 3,810,409.)

3,840,048, Stanadyne, Inc., SEAL CONSTRUCTION, **filed** Aug. 3, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83-5013 LEW (Mcx), *Stanadyne, Inc.* v. *Pacific Plumbing Products, et al.*

3,843,052, Graco, Inc., PNEUMATICALLY ASSISTED HYDRAULIC SPRAY COATING APPARATUS, **filed** Dec. 2, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 8851, *Graco, Inc.* v. *Binks Mfg. Co.*

3,846,968, Bigelow-Sanford, Inc., YARN STRUCTURE AND METHOD FOR PRODUCING SAME, **filed** Oct. 4, 1979, D.C., E.D. Tenn. (Greeneville), Doc. CIV-2-79-171, *Bigelow-Sanford, Inc.* v. *Richard W. Sheehan, et al.* Stipulation of Dismissal with prejudice filed by plaintiff on Sept. 10, 1980.

3,852,041, General Motors Corp., LOW PROFILE CATALYTIC CONVERTER, **filed** Jan. 26, 1976, D.C., S.D. Ohio (Dayton), Doc. C-3-76-28, *General Motors Corp.* v. *Toyota Motor Co., Ltd., et al.* Claims 5–8 of Pat. No. 3,852,041 are infringed by defendants's catalytic converter under the doctrine of equivalents. Findings of Fact, Opinion and Conclusions of Law filed Nov. 15, 1983.

3,852,139. (See 3,783,083.)

3,852,140. (See 3,783,083.)

3,857,206, Edward B. Heffran, Jr., COMPOUND MOTION RUBBING MACHINE, **filed** Sept. 28, 1983, D.C., M.D. Fla. (Tampa), Doc. 83-1239-Civ-T-15, *Edward B. Heffran, Jr., et al.* v. *A to Z Products Co., Inc.* **Same, filed** Jan. 16, 1984, D.C., E.D. Mich. (Detroit), Doc. 84CV0204DT, *Edward H. Heffran, Jr., et al.* v. *Universal Power, Inc.*

3,859,260, Uniroyal, Inc., OLIGOMERS; **3,965,028, same,** BISULFITE TERMINATED OLIGOMERS TO PREVENT SCALE; **4,004,939, same,** BISULFITE TERMINATED OLIGOMERS AS DISPERSING AGENTS, **4,115,435, same,** BISULFITE TERMINATED OLIGOMERS AS DISPERSING AGENTS, **filed** June 24, 1983, D.C.N.J. (Newark), Doc. 83-2354, *Uniroyal, Inc.* v. *Nalco Chemical Co.* Notice of Dismissal of Action filed Oct. 27, 1983.

3,860,003, The Procter & Gamble Co., CONTRACTABLE SIDE PORTIONS FOR DISPOSABLE DIAPER; **4,081,301, same,** METHOD AND APPARATUS FOR CONTINUOUSLY ATTACHING DISCRETE, STRETCHED ELASTIC STRANDS TO PREDETERMINED ISOLATED PORTIONS OF DISPOSABLE ABSORBENT PRODUCTS, **filed** June 19, 1979, D.C. Del. (Wilmington), Doc. 79-287, *The Procter & Gamble Co.* v. *Riegel Textile Corp.* Plaintiff is the owner of Pat. Nos. 3,860,003 and 4,081,301. Defendant is permanently enjoined and restrained from further infringing Plaintiff's patents. Dated May 28, 1980.

3,860,003, The Procter & Gamble Co., CONTRACTABLE SIDE PORTIONS FOR DISPOSABLE DIAPER, **filed** Mar. 5, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 1221, *The Procter & Gamble Co.* v. *Weyerhaeuser Co., et al.*

3,860,162, Nospil Ltd., NON-SPILL DRINKING CUP TOP, **filed** Nov. 25, 1983, D.C., E.D. Pa. (Philadelphia), Doc. 83-5720, *Nospil Ltd.* v. *Dart Container Corp.*

3,861,417, Carlton L. Koehler, INSTRUMENT CONSOLE FOR UNDERWATER DIVING APPARATUS; **4,197,747, same,** UNDERWATER INSTRUMENT CASE, **filed** Feb. 29, 1984, D.C., C.D. Calif. (Los Angeles), Doc. 84 1314 TJH (Mcx), *Carlton L. Koehler* v. *Dacor Corp., et al.*

3,873,741, Griffith Laboratories U.S.A., Inc., AIR REGULATION IN THE PYROLYSIS OF WOOD TO PRODUCE LIQUID SMOKE FOR THE TREATMENT OF FOOD PRODUCTS, **filed** Mar. 11, 1980, D.C., M.D. Tenn. (Nashville), Doc. 80-3107, *Griffith Laboratories U.S.A., Inc.* v. *B & L Laboratories, Inc., et al.*

3,875,719, Troy Steel Corp., METAL SUPPORT FOR WOOD STRUCTURAL ELEMENTS, **filed** July 27, 1979, D.C., E.D. Mich. (Bay City), Doc. 972982, *Troy Steel Corp.* v. *Gordon Machinery Co.* Consent Judgment filed Nov. 21, 1980.

3,877,237, Robert M. Norman, UNDERWATER TRENCHING APPARATUS GUIDANCE SYSTEM; **3,926,003, same,** BOUYANCY AND ATTITUDE CORRECTION METHOD AND APPARATUS; **4,087,981, same,** BUOYANT SELF-PROPELLED UNDERWATER TRENCHING APPARATUS, **filed** Aug. 25, 1983, D.C., E.D. La. (New Orleans), Doc. 83-4271, *Sub Sea, Inc.* v. *Robert M. Norman, et al.*

3,877,484, B.W.B. Controls, Inc., PNEUMATIC RELAY; **3,963,050, same, filed** Nov. 29, 1983, D.C., E.D. La. (New Orleans), Doc. 83-5791, *B.W.B. Controls, Inc.* v. *Total Engineering Services Team, doing business as Test.* **Same, filed** Dec. 2, 1983, D.C., S.D. Miss. (Biloxi), Doc. S83-1088(R), *B.W.B. Controls, Inc.* v. *Wellcheck.* Order transferring action to D.C., E.D. La. (New Orleans), filed Mar. 9, 1984. **Same, filed** Mar. 9, 1984, D.C., E.D. La. (New Orleans), Doc. 84-1203, M, *C.S.E. Automation Engineering and Services, Inc., doing business as Automation U.S.A., et al.* v. *B.W.B. Controls, Inc.*

3,878,783. (See 3,783,083.)

3,882,287, Perkins Research & Mfg. Co., METHOD AND APPARATUS FOR DETECTING FAULTS AND LOCATING CONDUCTORS IN MULTI-CONDUCTOR CABLES, **filed** Nov. 8, 1983, D.C., S.D. Miss. (Jackson), Doc. J83-0802(R), *Perkins Research & Mfg. Co.* v. *Parkway Systems Engineering, et al.*

3,883,745, Victoreen, Inc., COMBINED HOLDER AND ADAPTER FOR LIQUID SCINTILLATION COUNTERS, **filed** Jan. 6, 1981, D.C., S.D.N.Y., Doc. 81-Civ-37, *Victoreen, Inc.* v. *Gordon-Keeble, Inc.* **Same, filed** Oct. 31, 1980, D.C., N.D. Ohio (Cleveland), Doc. C80-2021A, *Victoreen, Inc.* v. *Isolab, Inc.* Stipulation and Order dismissing complaint of plaintiff and counterclaim of defendant, with prejudice, filed Jan. 23, 1981. **Same, filed** Nov. 19, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 7141, *Victoreen, Inc.* v. *Packard Instrument Co., Inc.* Stipulation and Agreed Order dismissing complaint of plaintiff and counterclaim of defendant, with prejudice, dated Apr. 12, 1983.

3,884,068, Frank R. Dybel, LOAD SENSING DEVICE; **4,048,848, same,** LOAD MONITORING SYSTEM; **4,062,055,** Dybel and Dybel, LOAD MONITORING SYSTEM WITH HIGH AND LOW LOAD CONTROL; **4,171,646,** Dybel and Dybel, LOAD DIFFERENTIAL MONITORING SYSTEM, **filed** Feb. 5, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 728, *International Measurement & Control Co.* v. *Production Engineering Co.* Cause dismissed without prejudice by agreement of parties on July 7, 1983.

3,884,068, Frank R. Dybel, LOAD SENSING DEVICE; **4,048,848, same,** LOAD MONITORING SYSTEM; **4,062,065,** Dybel and Dybel, LOAD MONITORING SYSTEM WITH HIGH AND LOW LOAD CONTROL, **filed** Nov. 23, 1977, D.C., N.D. Ill. (Chicago), Doc. 77 C 4399, *International Measurement and Control Co.* v. *Productronix, Inc., et al.* On Apr. 26, 1982, Pat. No. 3,884,068 was determined to be valid and Pat. Nos. 4,048,848 and 4,062,055 were determined to be not valid. In accordance with Conclusions of Law (1) - (4), defendants are not liable for infringement of Pat. No. 3,884,068, per Findings and Fact, Opinion and Conclusions of Law dated Sept. 12, 1983.

3,884,439, John Jeninga, GOLF BAG CRADLE-BRACKET, **filed** June 2, 1983, D.C., W.D.N.Y. (Rochester), Doc. CIV-83-590T, *Ajay Enterprises Corp.* v. *Reltron Corp.* Defendant has infringed Pat. No. 3,884,439. Defendant is permanently enjoined from infringing Pat. No. 3,884,439. Consent Decree and Judgment filed Dec. 12, 1983.

3,889,305, Nassau Tape & Webbing Mills, Inc., HEAT BARRIER TEXTILE MATERIAL, **filed** Dec. 30, 1982, D.C.N.J. (Newark), Doc. 82-4430, *Nassau Tape & Webbing Mills, Inc.* v. *Advanced Thread Corp., et al.* Order dismissing action filed Mar. 26, 1984.

3,889,434, Lyle N. Shelver, THERMAL GLASS STRUCTURAL DEVICE; **4,033,087, same,** THERMAL GLASS STRUCTURAL METHOD AND DEVICE; **4,295,305, same,** THERMAL GLASS STRUCTURE AND METHOD FOR FORMING SAME, **filed** May 18, 1983, D.C., W.D. Wash. (Seattle), Doc. C83-671M, *Weather Master, Inc.* v. *Insulate Industries, Inc.*

3,891,585, Charles H. McDonald, ELASTOMERIC PAVEMENT REPAIR COMPOSITION FOR PAVEMENT FAILURE AND A METHOD OF MAKING THE SAME, **filed** Aug. 21, 1981, D.C., W.D. Okla. (Oklahoma City), Doc. 81-1125-D *Allied Materials Corp.* v. *Atlas Rubber, Inc., Crafco, Inc. and Charles H. McDonald.*

3,892,871, Ned Cooper, HIGH FRUCTOSE CORN SYRUP JELLIES, **filed** Dec. 12, 1980, D.C., W.D.N.Y. (Buffalo), Doc. 80-1142E, *Ned Cooper* v. *Welch Foods, Inc.*

3,893,462, Michael R. Manning, BIOELECTROCHEMICAL REGENERATOR AND STIMULATOR DEVICES AND METHODS FOR APPLYING ELECTRICAL ENERGY TO CELLS AND/OR TISSUE IN A LIVING BODY, **filed** Dec. 7, 1981, D.C., S.D.N.Y., Doc. 81-Civ-7592 (JES), *Electro-Biology, Inc.* v. *Inco United States, Inc.*

3,894,530, Dardik and Dardik, METHOD FOR REPAIRING, AUGMENTING, OR REPLACING A BODY CONDUIT OR ORGAN; **3,974,526, same,** VASCULAR PROSTHESES AND PROCESS FOR PRODUCING THE SAME; **3,988,782, same,** NON-ANTIGENIC, NON-THROMBOGENIC INFECTION-RESISTANT GRAFTS FROM UMBILICAL CORD VESSELS AND PROCESS FOR PREPARING AND USING SAME, **filed** Apr. 18, 1978, D.C.N.J. (Newark), Doc. 78-804, *Israel Schechter, et al.* v. *Irving Dardik, Herbert Dardik, et al.* Stipulation and Order of dismissal of action filed Mar. 21, 1980.

3,898,566, Phasecom Corp., METHOD AND APPARATUS FOR REDUCING DISTORTION IN MULTICARRRIER COMMUNICATION SYSTEMS, **filed** Sept. 21, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83 6066, *Phasecom Corp.* v. *RCA Corp.* Order dismissing action pursuant to settlement dated Mar. 16, 1984.

3,905,949, Mobay Chemical Corp., STILBENE AZO LITHIUM SALT DYES, **filed** Oct. 10, 1980, D.C., N.D.N.Y. (Utica), Doc. 80-CV-824, *Mobay Chemical Corp.* v. *BASF Wyandotte Corp.*

3,909,886, Kurt Hocke, DEVICE FOR TRACTION-PROOF AND PRESSURE RESPECTIVELY MOISTURE-TIGHT SEALING OF A CABLE END, **filed**

Aug. 3, 1983, D.C. Minn. (Minneapolis), Doc. 4-83 Civil 672, *Russell J. Weaver* v. *Condux Intl., Inc.*

3,910,296, Allergan Pharmaceuticals, Inc., METHOD OF REMOVING PROTEINACEOUS DEPOSITS FROM CONTACT LENSES, **filed** Mar. 27, 1981, D.C., N.D. Tex. (Ft. Worth), Doc. CA4-81-164K, *Allergan Pharmaceuticals, Inc.* v. *Alcon Laboratories, Inc.*

3,913,116, Arriflex Corp., CAMERA WITH ADJUSTABLE VIEWFINDER, **filed** June 24, 1980, D.C., S.D.N.Y., Doc. 80-Civ-3545, *Arriflex Corp.* v. *Aaton Cameras, Inc.*

3,915,639, Robert M. Friedenberg, DRUG ABUSE DIPSTICK, **filed** Feb. 10, 1984, D.C., E.D. Pa. (Philadelphia), Doc. 84-0713, *Med-Tech Products, Inc.* v. *Keystone Medical Corp., et al.*

3,917,911, James M. Lesher, SECURITY ENTRY SYSTEMS, **filed** July 24, 1981, D.C., S.D. Fla. (Miami), Doc. 81-1570-CIV-EBD, *David W. Ayres, et al.* v. *Howard Shidlowsky.*

3,919,407, Aurora Fernandez de Castro, METHOD FOR QUANTITATIVE DETERMINATION OF RENIN ACTIVITY IN BLOOD; **3,984,532, same,** METHOD FOR QUANTITATIVE DETERMINATION OF RENIN ACTIVITY IN BLOOD EMPLOYING PHENYL METHYL SULFONYL FLUORIDE AND POLYETHYLENE GLYCOL; **4,112,064,** Farrenkopf and Gomez, STABILIZED ANGIOTENSIN I SOLUTIONS, **filed** Sept. 23, 1977, D.C.N.J. (Trenton), Doc. 77-1989, *Aurora Fernandez de Castro, et al.* v. *Baxter Travenol Laboratories, Inc., et al.*

3,922,876, Energy Conservation Unlimited, Inc., ENERGY CONSERVATION UNIT, **filed** May 10, 1983, D.C., M.D. Fla. (Tampa), Doc. 83-571 Civ T-15, *Energy Conservation Unlimited, Inc.* v. *National Energy Saver Products, Inc.*

3,923,148, Wolfgang C. Dorner, CONVEYING SYSTEM, **filed** Jan. 19, 1984, D.C., N.D. Ill. (Chicago), Doc. 84 C 0445, *Dorner Mfg.* v. *Bunting Magnetics Co., Inc.*

3,925,485, Chabardes, Grard and Schneider, PROCESS FOR THE PREPARATION OF ALLYLIC ALCOHOLS, **filed** July 15, 1983, D.C., M.D. Fla. (Jacksonville), Doc. 83-703-Civ-J-12, *Rhone-Poulenc Specialites Chimiques, et al.* v. *SCM Corp.*

3,926,003. (See 3,877,237.)

3,931,828, Quik-N-Easy Products, Ltd., FLUSHING ACCESSORY FOR OUTBOARD MOTORS, **filed** Feb. 16, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83 980, *Quik-N-Easy Products, Ltd.* v. *Brunswick Corp.* Plaintiff's complaint dismissed with prejudice per Judgment of dismissal and stipulation filed Mar. 12, 1984.

3,939,688, Misch and Huiber, VOLUMETRIC CALIBRATION, **filed** June 10, 1983, D.C., W.D. Mich. (Grand Rapids), Doc. G83-633CA1, *Edge Industries, Inc.* v. *HNR Engineering, Inc.*

3,941,698, Frank G. Weis, GRIT SELECTOR, **filed** Apr. 27, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 2892, *Smith & Loveless, Inc.* v. *National Hydro Systems, Inc.*

3,946,634. (See 3,810,409.)

3,946,788, Verosol, B.V., FOLDABLE CURTAIN SCREEN OR BLIND CONSTRUCTION AND A METHOD FOR PRODUCING A CURTAIN BLIND CONSTRUCTION, **filed** Sept. 7, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83 5781 MMC, *Verosol, B.V.* v. *Joanna Western Mills Co.*

3,951,545, Lucht Engineering, Inc., PHOTOGRAPHIC PRINT APPARATUS, **filed** Mar. 15, 1984, D.C. Minn. (St. Paul), Doc. 3-84-359, *Lucht Engineering, Inc.* v. *Nord Photo Engineering, Inc.*

3,963,050. (See 3,877,484.)

3,965,028. (See 3,859,260.)

3,967,505, Heinrich Feichtinger, METHOD AND MEANS FOR DRAWING SAMPLES FROM MELTS, **filed** Apr. 18, 1984, D.C., W.D. Mich. (Kalamazoo), Doc. K84-171 CA8, *Leybold-Heraeus Technologies, Inc.* v. *Leco Corp.*

3,967,752, Reynolds Metal Co., EASY-OPEN WALL; **3,967,753, same; 4,051,976, same,** CONTAINER WITH ATTACHED CLOSURE, **filed** Nov. 12, 1976, D.C., N.D. Ill. (Chicago), Doc. 76 C 4198, *Reynolds Metal Co.* v. *Continental Group, Inc.* Judgment is entered in favor of plaintiff. Defendant is hereby enjoined from any further infringement of Pat. Nos. 3,967,752, 3,967,753 and 4,051,976. Filed July 6, 1981.

3,967,753. (See 3,967,752.)

3,972,352, Kobe, Inc., DISCHARGE ELEMENT FOR LIQUID-GAS SEPARATOR UNIT, **filed** June 24, 1983, D.C., N.D. Okla. (Tulsa), Doc. 83-C-541-B, *Kobe, Inc.* v. *Hughes Tool Co.*

3,974,526. (See 3,894,530.)

3,982,577, Frank M. Scimeca, TUBE GUARD, **filed** Dec. 9, 1983, D.C.N.J. (Trenton), Doc. 83-4793, *Mr. Tuffy Co., Inc.* v. *Kool-Stop, et al.*

3,984,532. (See 3,919,407.)

3,987,467, David W. Cowles, PHOTOGRAPHIC FILM IDENTIFICATION SYSTEM, **filed** Mar. 22, 1983, D.C., C.D. Calif. (Los Angeles), Doc. 83 1696, *Shaster Corp.* v. *Pako Corp.* Notice of Voluntary Dismissal filed by Plaintiff on May 13, 1983.

3,988,782. (See 3,894,530.)

3,991,282, Thomas E. Feil, MULTI STATION TELEPHONE SWITCHING SYSTEM, **filed** Nov. 21, 1980, D.C., S.D.N.Y., Doc. 80-Civ-6602 KTD, *Interconnect Planning Corp.* v. *Thomas E. Feil.* Judgment filed June 9, 1982.

3,994,711, Harold A. McMaster, GLASS TEMPERING SYSTEM INCLUDING OSCILLATING ROLLER FURNACE, **filed** Apr. 12, 1984, D.C., E.D. Mich. (Detroit), Doc. 84-1740DT, *Glass Tech, Inc.* v. *The Howe-Martz Glass Co.*

3,995,498, Nortron Corp., WHEEL MOUNTING ASSEMBLY FOR TIRE BALANCING MACHINE; **4,352,291, same,** WHEEL BALANCING MACHINE, **filed** Apr. 26, 1983, D.C., N.D. Calif. (San Jose), Doc. C-83-20066 WAI, *Nortron Corp.* v. *Dynabal Corp., et al.* Complaint dismissed with prejudice. Dated Apr. 13, 1984.

4,004,939. (See 3,859,260.)

4,014,691, M. Hamdi A. Mohammed, DENTAL BRIDGE ALLOY; **4,249,943,** Mohammed, Agarwal and Ingersoll, NON-PRECIOUS CERAMIC ALLOY, **filed** Mar. 1, 1984, D.C., W.D.N.Y. (Buffalo), Doc. 84-0214E, *Dr. M. Hamdi A. Mohammed* v. *Williams Gold Refining Co., Inc.*

4,016,624, Victor F. Weaver, Inc., POULTRY CUT-UP MACHINE, **filed** June 21, 1983, D.C., N.D. Ga. (Atlanta), Doc. C83-1300A, *Cagle's, Inc.* v. *U.S. Industries, Inc., et al.* Consent Judgment filed Mar. 26, 1984.

4,019,301, Fox Industries, Inc., CORROSION-RESISTANT ENCASEMENT FOR STRUCTURAL MEMBERS, **filed** May 8, 1980, D.C., M.D. Fla. (Jacksonville), Doc. 80-426-CIV-J-WC, *Fox Industries, Inc.* v. *Odom Tank Corp., Inc.* **Same, filed** Oct. 20, 1983, D.C. Md. (Baltimore), Doc. Y-83-3689, *Fox Industries, Inc.* v. *Structural Preservation Systems, Inc.*

4,027,532, Sun Electric Corp., COMPRESSION TESTING APPARATUS, **filed** Mar. 22, 1984, D.C., N.D. Ill. (Chicago), Doc. 84 C 2543, *Sun Electric Corp.* v. *The Allen Group, Inc.*

4,033,087. (See 3,889,434.)

4,034,210, Dynetics Engineering Corp., CREDIT CARD CARRIERS AND METHODS OF MANUFACTURE; **4,194,685, same,** VERIFYING INSERTION SYSTEM APPARATUS AND METHOD OF OPERATION; **4,429,217, same,** VERIFYING INSERTION SYSTEM AND APPARATUS, **filed** Mar. 29, 1984, D.C., N.D. Ill. (Chicago), Doc. 84 C 2697, *Data Card Corp.* v. *Dynetics Engineering Corp.*

4,037,337, Charles W. Hemphill, EXCAVATING BUCKET AND TEETH FOR A BACKHOE; **4,123,861, same,** METHOD OF EXCAVATING EARTH WITH A BUCKET, **filed** Apr. 13, 1984, D.C., W.D. Wash. (Seattle), Doc. C84-457M, *GH Hensley Industries, Inc.* v. *Weldco, Inc.*

4,044,523, Eberhard Layher, FRAME STRUCTURE, PARTICULARLY SCAFFOLDING; **4,180,342, same,** ARRANGEMENT FOR CONNECTING STRUCTURAL MEMBERS, **filed** Dec. 17, 1982, D.C.N.J. (Newark), Doc. 82-4271, *Patent Scaffolding Co.* v. *Wilhelm Layher, GmbH, et al.* Order of dismissal of action filed Feb. 15, 1984.

4,048,848. (See 3,884,068.)

4,051,976. (See 3,967,752.)

4,055,329, Grover M. Hammond, SCISSORS JACK, **filed** Mar. 5, 1984, D.C., C.D. Calif. (Los Angeles), Doc. 84 1400 ER (Tx), *A & E Systems, Inc.* v. *The Scott & Fetzer Co., et al.*

4,062,055. (See 3,884,068.)

4,068,363, John Costa, HAND TOOL FOR MANIPULATING COIL SPRINGS, **filed** Apr. 9, 1984, D.C., S.D. Fla. (Miami), Doc. 84-0852-CIV-ALH, *John Costa* v. *Snap on Tools Corp.*

4,071,206, Aerospace General Co., PORTABLE HELICOPTER, **filed** Apr. 2, 1984, D.C., E.D. La. (New Orleans), Doc. 84-1592 M, *Caddo Capital Corp.* v. *Aerospace Intl., Ltd., Aerospace General Co. and Gilbert W. Magill.*

4,072,252, The ARA Corp., HAND OPERATED SPRAYER WITH AUTOMATIC CONTAINER VENT, **filed** Apr. 3, 1984, D.C., N.D. Ga. (Atlanta), Doc. C84-676A, *The AFA Corp.* v. *Universal Dispensing Systems, Inc.*

4,081,301. (See 3,860,003.)

4,087,981. (See 3,877,237.)

4,093,232, Bally Mfg. Corp., PLAYER OPERATED GAME APPARATUS, **filed** June 6, 1978, D.C., N.D. Ill. (Chicago), Doc. 78 C 2246, *Bally Mfg. Corp.* v. *D. Gottlieb & Co., et al.* Judgment entered for defendant on Mar. 29, 1984.

4,096,600, Belanger, Inc., FRICTION CURTAIN APPARATUS, **filed** May 4, 1983, D.C., S.D.N.Y., Doc. 83-Civ-3370, *Belanger, Inc.* v. *Chase Industries.* Pat. No. 4,096,600 is valid and has been infringed by defendants. Defendants are permanently enjoined from infringing said patent. Conset Judgment and Permanent Injunction filed Feb. 27, 1984.

4,102,101, Neilsen and Wood, GLASS PANES, AND BUILDINGS AND THE LIKE INCLUDING GLASS PANES, **filed** Apr. 9, 1984, D.C. Minn. (St. Paul), Doc. 3-84-458, *Twin View Glass, Inc.* v. *Altempco Glass Ltd., et al.*

4,109,791, Clipson and Herolzer, NESTABLE AND STACKABLE CONTAINER ASSEMBLY WITH IMPROVED BAIL STRUCTURES OF MOLDED PLASTIC, **filed** Apr. 11, 1984, D.C., E.D. Mich (Flint), Doc. 84CV8196, *Ekco Products, Inc.* v. *Pinckney Molded Plastics, Inc.*

4,112,064. (See 3,919,407.)

4,114,235, Richard C. Remington, STAY FOR HINGED MEMBERS; **4,259,856,** Rudolf Wingert, COMBINATION LOCKS AND DIAL-INDEXING SPRING THEREFOR, **filed** Apr. 24, 1984, D.C.N.J. (Newark), Doc. 84-1621 F, *Presto Lock, Inc.* v. *Franzen-Castiglioni North America, Inc.*

4,115,435. (See 3,859,260.)

4,123,861. (See 4,037,337.)

4,128,269, Hazel F. Stewart, TELESCOPING ROOM FOR TRAVEL TRAILERS, **filed** Feb. 22, 1984, D.C., N.D. Ind. (South Bend), Doc. S84-108, *John C. May* v. *Carriage, Inc.*

4,136,359, Apple Computer, Inc., MICROCOMPUTER FOR USE WITH VIDEO DISPLAY; **4,278,972, same,** DIGITALLY-CONTROLLED COLOR SIGNAL GENERATION MEANS FOR USE WITH DISPLAY, **filed** Apr. 17, 1984, D.C., S.D. Tex. (Houston), Doc. H-84-1749, *Apple Computer, Inc.* v. *Allen Computer Corp.*

4,145,300, Dieter Hendriks, DEVELOPERS CONTAINING MAGNETIC PARTICLES AND A SUBLIMABLE DYESTUFF; **4,246,331,** Mehl and Hendriks, ELECTROPHOTOGRAPHIC DEVELOPERS CONTAINING SUBLIMABLE DYES; **4,251,611,** Mehl, Hendriks and Decombe, PROCESS FOR FORMATION OF PERMANENT IMAGE, **filed** Feb. 1, 1984, D.C. Mass. (Boston), Doc. CA-84-293-MA, *Spectra Corp., et al.* v. *Anthony Casella, et al.*

4,149,541, American Hospital Supply Corp., FLUID CIRCULATING PAD, **filed** May 3, 1983, D.C., S.D. Ohio (Cincinnati), Doc. C-1-83-688, *Cincinnati Sub-Zero Products, Inc.* v. *American Hospital Supply Corp.* Defendant is the owner of Pat. No. 4,149,541 which is valid and enforceable and has been infringed by plaintiff. Consent Decree filed Mar. 23, 1984.

4,151,994, Robert J. Stalberger, Jr., GAME FOOTBAG, **filed** Apr. 6, 1984, D.C., S.D.N.Y., Doc. 84-Civ-2474 (JFK), *Marsha J. Marvel, et al.* v. *Wham-O, Inc.*

4,166,036, Environmental Elements Corp., FLOATING SKIMMING APPARATUS, **filed** July 13, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 4811, *Environmental Elements Corp.* v. *Lakeside Equipment Corp.* Consent Judgment and Injunction dated Apr. 6, 1984.

4,167,226, R. W. Harnett Co., Inc., CAPSULE TURNING APPARATUS (RANDOM SPIN PRINTING), **filed** Oct. 5, 1979, D.C.N.J. (Camden), Doc. 79-3011, *R. W. Harnett Co.* v. *Edward Michael Ackley, et al.* Order of dismissal, without prejudice and without costs, filed Mar. 20, 1984.

4,170,293, Cambelt Intl. Corp., ENCLOSED CONVEYOR, **filed** June 28, 1983, D.C., S.D. Ohio (Columbus), Doc. C-2-83-1164, *Cambelt Intl. Corp.* v. *Ashland Oil, Inc., et al.* Action dismissed with prejudice with each party to bear its own costs and attorney fees. Dated Apr. 25, 1984.

4,171,646. (See 3,884,068.)

4,173,293. (See 3,783,083.)

4,180,342. (See 4,044,523.)

4,185,850, Edward H. Levine, AUTOMATIC RELEASE BICYCLE HOLDER, **filed** Apr. 20, 1984, D.C., S.D. Ohio (Dayton), Doc. C-3-84-348, *Raleigh Cycle Co. of America* v. *Rhode Gear U.S.A.*

4,187,390, W. L. Gore & Associates, Inc., POROUS PRODUCTS AND PROCESS THEREFOR, **filed** Apr. 3, 1984, D.C. Ariz. (Phoenix), Doc. 84-559 PHX, *W. L. Gore & Associates, Inc., et al.* v. *International Medical Prosthetics Research Assoc., Inc.* **Same, filed** Feb. 24, 1984, D.C.N.J. (Newark), Doc. 84-729, *W. L. Gore and Associates, Inc., et al.* v. *C. R. Bard, Inc.* Consent Judgment for permanent injunction filed Apr. 13, 1984.

4,193,654, AMP, Inc., ELECTRICAL CONNECTOR RECEPTACLES, **filed** Apr. 2, 1984, D.C., N.D. Ill. (Chicago), Doc. 84 C 2815, *AMP, Inc.* v. *Molex, Inc.*

4,194,685. (See 4,034,210.)

4,197,747. (See 3,861,417.)

4,205,780, Burns and Ho, DOCUMENT PROCESSING SYSTEM AND METHOD, **filed** Nov. 22, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 7176, *ROI Consulting, Inc.* v. *Banctec, Inc.* **Same, filed** Mar. 28, 1984, D.C., N.D. Tex. (Dallas), Doc. CA3-84-0485-G, *Recognition Equipment, Inc.* v. *ROI Consulting, Inc.*

4,211,893, Mesa Engineering, Inc., DUAL MODE MUSIC INSTRUMENT AMPLIFIER, **filed** Dec. 22, 1981, D.C., S.D. Calif. (San Diego), Doc. 81-1307-E(H), *Mesa Engineering, Inc.* v. *Carvin Corp.* Plaintiff is the owner of Pat. No. 4,211,893. Defendant has infringed plaintiff's patent. Stipulated Consent Judgment filed June 28, 1982.

4,220,252, Miles Laboratories, Inc., BIOLOGICAL SPECIMEN PROCESS APPARATUS, **filed** July 14, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 4826, *Miles Laboratories, Inc.* v. *Surgipath Medical Industries, Inc.*

4,227,457. (See 3,783,083.)

4,234,820, Don F. Widmayer, LIGHT REGULATION SYSTEM; **4,352,045, same,** ENERGY CONSERVATION SYSTEM USING CURRENT CONTROL, **filed** Nov. 15, 1982, D.C. Md. (Baltimore), Doc. HM-82-3323, *Flexiwatt Corp.* v. *Controlled Energy Corp., et al.*

4,246,331. (See 4,145,300.)

4,247,773, Nexo and Andersen, METHOD FOR QUANTITATIVELY DETERMINING FAT IN A FAT-CONTAINING SAMPLE, **filed** Mar. 16, 1984, D.C., C.D. Ill. (Springfield), Doc. 84-3142, *Foss America, Inc.* v. *Multispec Holdings, Ltd.*

4,249,943. (See 4,014,691.)

4,251,611. (See 4,145,300.)

4,251,692, Herbert H. Waldman, TELEPHONE CALL RESTRICTING APPARATUS, **filed** Mar. 22, 1984, D.C., S.D.N.Y., Doc. 84-Civ-2034 (CES), *Herbert H. Waldman* v. *Robert L. Stevens, et al.*

4,255,962, Leland E. Ashman, METHOD AND MEANS OF RAPIDLY DISTINGUISHING A SIMULATED DIAMOND FROM NATURAL DIAMOND, **filed** July 29, 1981, D.C., C.D. Calif (Los Angeles), Doc. 81 3824, *Brunit Trading AB, et al.* v. *Ceres Electronics Corp.* **Same, filed** Mar. 30, 1981, D.C., N.D. Okla. (Tulsa), Doc. 81-C-125-B, *Ceres Electronics Corp.* v. *C & P Instruments, Inc.* Pat. No. 4,255,962 is valid and owned by Plaintiff. Defendant is enjoined from further infringing this patent. Dated. Oct. 27, 1981. **Same, filed** Apr. 9, 1981, D.C.N.J. (Newark), Doc. 81-1057, *Ceres Electronics Corp.* v. *Trans-American Gems and Minerals, Inc.* Order dismissing action without costs filed Dec. 1, 1981.

4,259,856, Rudolf Wingert, COMBINATION LOCKS AND DIAL-INDEXING SPRING THEREFOR, **filed** Feb. 8, 1984, D.C. Md. (Baltimore), Doc. R84-463, *Presto Lock, Inc.* v. *The Baltimore Luggage Co.*

4,259,856. (See 4,114,235.)

4,274,902. (See 3,783,083.)

4,278,972. (See 4,136,359.)

4,282,521, TIF Instruments, Inc., REGULATING CIRCUIT OR GASEOUS IMPURITY DETECTOR, **filed** Apr. 18, 1984, D.C., S.D. Fla. (Miami), Doc. 84-0969-Civ-CA, *TIF Instruments, Inc.* v. *Control Power Systems, Inc.*

4,286,622, Youichi Ninomiya, CHECK VALVE ASSEMBLY, **filed** Apr. 4, 1984, D.C., S.D. Tex. (Houston), Doc. H-84-1590, *Ashi/America, Inc., et al.* v. *Shie Yu Mancine Parts Industrial Co., Ltd.*

4,292,057, Flex Kleen Corp., TOP REMOVAL SUPPORT FOR DUST COLLECTOR BAGS, **filed** June 9, 1983, D.C., N.D. Ill. (Chicago), Doc. 83 C 3987, *Flex Kleen Corp.* v. *Ultra Industries, Inc., et al.*

4,295,305. (See 3,889,434.)

4,296,930, Jeffrey E. Frederiksen, TV GAME APPARATUS; **4,301,503, same,** HOME COMPUTER AND GAME APPARATUS, **filed** June 3, 1982, D.C., S.D.N.Y., Doc. 82-Civ-3643, *Astrocade, Inc., et ano.* v. *Atari, Inc., et ano.*

4,301,503. (See 4,296,930.)

4,305,467, Power Lift, Inc., BLOW-OUT PREVENTER LIFT SYSTEM AND METHOD, **filed** Dec. 15, 1981, D.C., W.D. Okla. (Oklahoma City), Doc. 81-1748-R, *Power Lift, Inc.* v. *Lang Tools, Inc., et al.* Plaintiff is the owner of Pat. No. 4,305,467 which is valid and enforceable. Defendant is enjoined from further infringing Plaintiff's patent. Judgment filed Mar. 15, 1984.

4,310,406. (See 3,616,356.)

4,350,858, Sanyo Electric Co. Ltd., APPARATUS AND METHOD FOR CONTROLLING ELECTRONIC CONTROLLED COOKING APPARATUS; **4,390,766, same,** APPARATUS AND METHOD FOR CONTROLLING ELECTRONIC CONTROLLED COOKING APPARATUS HAVING STORAGE, **filed** Apr. 11, 1984, D.C., S.D.N.Y., Doc.84-Civ-2571 (GLG), *Sanyo Electric Co. Ltd.* v. *Samsung Electronics America, Inc., et al.*

4,352,045. (See 4,234,820.)

4,352,291. (See 3,995,498.)

4,356,600, George A. Welch, BAG CLOSURE DEVICE; **4,394,791,** Francis R. Groth, CLOSURE CLAMP FOR FOOD BAGS, **filed** Feb. 28, 1984, D.C., E.D. Mo. (St. Louis), Doc. 84-477C(5), *Aluminum Housewares Co., Inc.* v. *Chip Clip Corp., et al.*

4,371,752, Matthews, Tansil and Fannin, ELECTRONIC AUDIO COMMUNICATION SYSTEM, **filed** Aug. 5, 1983, D.C., N.D. Calif. (San Jose), Doc. 83-20182 WAI, *VMX, Inc.* v. *Voicemail International, Inc.*

4,384,801, David O. Hamel, JUNCTION PLATE, **filed** May 24, 1983, D.C. Minn. (Minneapolis), Doc. 4-83 Civil 428, *United Steel Products Co.* v. *East-West Design, Inc.* Consent Judgment filed Mar. 16, 1984.

4,390,766. (See 4,350,858.)

4,392,510, Friedrich, Wihl. Schwing, GmbH, CONTROL VALVE FOR VISCOUS MATERIAL PUMPS; **Reg. No. 1,238,037** (SCHWING), Friedrich, Wihl. Schwing GmbH, **filed** Feb. 24, 1984, D.C. Colo. (Denver), Doc. 84-JM-416, *Friedrich, Wihl. Schwing, GmbH* v. *Pumpco, Inc.*

4,392,510, Friedrich, Wihl. Schwing, GmbH, CONTROL VALVE FOR VISCOUS MATERIAL PUMPS, **filed** Mar. 27, 1984, D.C., M.D. Fla. (Tampa), Doc. 84-300-CIV-T-17, *Friedrich Wihl. Schwing, GmbH* v. *Pumping Units Mfg. Parts & Systems, Inc., et al.*

4,394,791. (See 4,356,600.)

4,401,335, Byron L. Godbersen, BOAT HOIST, **filed** Nov. 3, 1983, D.C., E.D. Mich. (Bay City), Doc. 83CV7374BC, *Byron L. Godbersen* v. *Michigan Docks, Inc.* Plaintiff is the owner of Pat. No. 4,401,335. Defendant is permanently restrained and enjoined from further infringing Plaintiff's patent. Consent Judgment and Injunction dated Feb. 29, 1984. **Same, filed** Nov. 17, 1983, D.C., W.D. Mich. (Grand Rapids), Doc. G83-1353CA6, *Byron L. Godbersen* v. *Stevens Design & Fabrication, Inc.* Plaintiff is the owner of Pat. No. 4,401,335. Defendant is permanently restrained and enjoined from further infringing Plaintiff's patent. Consent Judgment and Injunction filed Mar. 21, 1984.

4,404,687, Markus Hager, CONVERTIBLE OUTERWEAR AND CARRYING BAG, **filed** Oct.

10, 1983, D.C., S.D.N.Y., Doc. 83-Civ-7445 RWS, *Franconia Sportswear, Inc.* v. *Corio Industrial Corp.* Defendant is permanently enjoined from making, selling or offering for sale any garment which infringes Pat. No. 4,404,687. Final Judgment on Consent filed Apr. 20, 1984.

4,410,024, Wofford M. Folse, Sr., APPARATUS AND METHOD OF ASSEMBLING BARGE FENDERS, **filed** Mar. 27, 1984, D.C., E.D. La. (New Orleans), Doc. 84-1498 A-4, *Coastal Timbers, Inc. and Wofford M. Folse, Sr.* v. *Ryan Timbers Corp., et al.*

4,411,033, Charles W. Morgan, WAVELESS WATERBED, **filed** Apr. 10, 1984, D.C., S.D. Ohio (Cincinnati), Doc. C-1-84-615, *Morgan Flotation Systems* v. *The Giant Furniture Warehouse, Inc.*

4,429,217. (See 4,034,210.)

4,439,202, Virginville Patents, Inc., EMBROIDERED TRANSFER AND METHOD OF MAKING SAME, **filed** Mar. 27, 1984, D.C., E.D. Pa. (Philadelphia), Doc. 84-1479, *Carolace Embroidery Co., Inc.* v. *Virginville Patents, Inc.*

D. 241,074. (See 3,783,083.)

U.S. PATENT AND TRADEMARK OFFICE

NOTICE OF CHANGES IN THE PATENT EXAMINING CORPS

Many changes have taken place in the Patent Examining Corps over the past few months. The Corps has been restructured to meet the needs of the public, changing technology, and workload requirements.

The restructuring involved rebalancing the Corps to more accurately reflect anticipated workloads and to better associate related arts. To this end, the five chemical groups were rearranged into four chemical groups, i.e., Groups 110, 120, 130, and 150. A new electrical Group 260 was assembled from components drawn from the other electrical groups. In addition, twelve (12) additional art units were created to provide appropriate supervision for the Corps as enlarged by the large number of examiners hired the past few years. The new art units were distributed throughout the Groups as dictated by anticipated supervisory workloads. In addition, additional space was provided the patent Examining Corps in Building 2 in Crystal Plaza.

The rebalancing and expansion effort resulted in many examiners being moved to new rooms, with some being reassigned to different groups and art units. In addition, a great deal of art was moved. As part of this notice, an organizational telephone directory is included that identifies the makeup of the Examining Corps and the locations and telephone numbers of management personnel in the Corps. In addition, there is included a listing of all the art arranged numerically by class, that identifies the art unit to which a class, or a part thereof, is assigned and the location of that body of art.

Coincidentally with the move, work was begun to modernize the telephone system used by Corps personnel. Unfortunately, while the move has been completed, it will be sometime before the telephone work is finished. Hence, a certain amount of inconvenience in reaching Corps personnel by phone has already occurred and undoubtedly will continue to occur, until the telephone work is finished. Your patience and understanding is sincerely appreciated. We have included with this notice a directory of all the examiners that identifies their telephone numbers as of June 5, 1984. Some of these numbers will change over the next few months. A new directory will be published each time a sufficient number of telephone numbers are changed. In the meantime, to help the public cope during the transition, the following guidelines are offered:

1. Examining Corps personnel can be reached on the telephone by calling their last known number (e.g., the number shown in one of the included directories). The answering receptionist will be provided with a directory of phone numbers which will be updated daily. The caller will be informed of or transferred, if possible, to the new number.

2. Persons who are not successful in reaching an Office employee by telephone should call our information number (703) 557-3080 for the latest telephone number of the employee.

3. To determine the current Group or art unit assignment or other pertinent information concerning a patent application (for those entitled to such information) call any telephone associated with the Group to which the application was assigned. The answering receptionist - once assured of the caller's identity and/or entitlement - will provide the current art unit assignment or the other pertinent information concerning the application as shown on the PALM system.

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June 5, 1984

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133 Paper making and fiber liberation, glass manufacture, methods of cleaning and liquid contact with solids, refrigeration processes, concentrating evaporators, separatory distillation processes and apparatus Wilbur L. Bascomb rm 7B36 CP3..... 557-2475

134 Chemical apparatus such as analyzers, reactors, sterilizers, crystallizers and dialyzers; processes of chemical analysis, sterilizing, preserving and miscellaneous physical processes such as crystallizing and agglomerating Barry S. Richman rm 9B02 CP3..... 557-2475

135 Gas separation, solids separation and gas and liquid contact
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345 Combustion of fuels and substances, heating the environment and extracting heat from sun Samuel Scott rm 3E02 CP4..... 557-3467
346 Devices and methods for transferring heat from one material to another, turbochargers, superchargers, poppet valve operation and exhaust gas treatment for internal combustion engines, rotary internal combustion engines and powerplant of the type using natural heat William Cline rm 2B02 CP4..... 557-5679
347 Fluid handling which includes valves, pressure regulators and flow controllers for liquids and gases Martin Schwadron rm 3D41 CP4..... 557-3214

350 General Constructions, Petroleum and Mining Engineering rm 3C17 CP3..... 557-6200
Director Al Lawrence Smith rm 3D17 CP3..... 557-3414
Secretary Carol M. Sinclair rm 3D19 CP3..... 557-3414
Clerk Joyce G. Hill rm 3D13 CP3..... 557-6200
351 Joints and connections, pipe couplings, fences, earth & hydraulic engineering Cornelius J. Husar rm 4D01 CP3..... 557-6200
352 Gearing, power transmissions, clutches, machine elements Leslie A. Braun rm 3E16 CP3..... 557-6200
354 Building structures and components Donald G. Kelly rm 3D21 CP3..... 557-6200
355 Supports, racks, fire escapes, ladders, scaffolds, flexible partitions Ramon S. Britts rm 4E02 CP3..... 557-6200
356 Petroleum, mining, highway and bridge engineering, well drilling, and endless belts James A. Leppink rm 4D35 CP3..... 557-6200
357 Tables, chairs, cabinets, windows, doors, buckles, buttons, clasps William E. Lyddane rm 4A01 CP3..... 557-6200
358 Fasteners, safes, locks, closure fasteners, beds, control levers and linkages Gary L. Smith rm 3E02 CP3..... 557-6200

OFFICE OF THE ASSISTANT COMMISSIONER FOR EXTERNAL AFFAIRS
Assistant Commissioner Michael K. Kirk rm 11C28 CP3..... 557-3065
Secretary Carla Bowman rm 11C28 CP3..... 557-3065
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Public Information Specialist Oscar G. Mastin rm 1A05 CP2..... 557-3341
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Director (Vacant) rm 11C28 CP3..... 557-3065

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Secretary Sheila G. Pellman rm 11C17 CP3..... 557-3061
Trademark Administrator Robert M. Anderson rm 11C17 CP3..... 557-3916
Director of Trademark Program Analysis Marc A. Bergsman rm 11C17 CP3..... 557-2521
Special Assistant Ellen J. Seeherman rm 11C17 CP3..... 557-7464
Staff Assistant (Vacant) rm 11C17 CP3..... 557-7464
Budget Analyst Maude A. Williams rm 11C17 CP3..... 557-2222
Paralegal Specialist Keturah E. Patrick rm 11C17 CP3..... 557-2221

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Gary D. Krugman 1008 CS5..... 557-3551
Janet E. Rice 1008 CS5..... 557-3551
J. David Sams 1008 CS5..... 557-3551
Rany L. Simms 1008 CS5..... 557-3551
Attorney-Examiners:
Paula T. Hairston 1008 CS5..... 557-3551
Beth A. Chapman 1008 CS5..... 557-3551
G. Douglas Hohein 1008 CS5..... 557-3551
T. Jeffrey Quinn 1008 CS5..... 557-3551
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Clerk of the Board Evelyn R. Lopez 1008 CS5..... 557-3551
Deputy Clerk Erma S. Brown 1008 CS5..... 557-3551

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Deputy Director Patricia M. Davis rm 3C06 CP2..... 557-3268
Secretary Ann Farson rm 3C06 CP2..... 557-3268
Procedure & Special Projects Attorney Carlisle Walters rm 3C06 CP2... 557-3268
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Trademark Law Offices:
Managing Attorney Law Office I Charles J. Condro rm 2C28 CP2..... 557-3273
Lead Attorney Joseph H. Webb
Secretary Glenda Calhoun
Managing Attorney Law Office II John C. Demos rm 2C24 CP2..... 557-3277
Lead Attorney (Vacant)
Secretary Doshie Day
Managing Attorney Law Office III Myra Kurzbard rm 2C22 CP2..... 557-9560
Lead Attorney Thomas Lamone
Secretary Mesha Johnson
Managing Attorney Law Office IV (Vacant) rm 3C13 CP2..... 557-9550
Lead Attorney David M. Soroka
Secretary Patsy McDermott
Managing Attorney Law Office V Paul Fahrenkopf rm 2C11 CP2..... 557-5380
Lead Attorney Donald Fingeret
Secretary Ravonne Lee
Managing Attorney Law Office VI Ronald E. Wolfington rm 3C27 CP2..... 557-2937
Lead Attorney Robert M. Feeley
Lead Attorney Christopher Sidoti
Secretary Myrtle L. Robinson
Managing Attorney Law Office VII Peter Harab rm 4C13 CP2..... 557-5237
Lead Attorney David Shallant
Secretary Helen M. Gibson
Managing Attorney Law Office VIII Sidney Moskowitz rm 4C14 CP2..... 557-5242
Lead Attorney Michael E. Bodson
Secretary (Vacant)
Trademark Services Division Doreane Poteat rm 4D23 CP2..... 557-5249
Application and Classification Team Leon Jackson rm 4C28 CP2..... 557-5249
IKE & Assembly Team Portia Taylor rm 4D29 CP2..... 557-5253
Post-Registration Supervisor Catherine R. Hill rm 4C24 CP2..... 557-1986
Publication & Issue Supervisor Donald Perritt rm 4C23 CP2..... 557-5247
Affidavit Examiners rm 4C24 CP2..... 557-1988
Renewal Examiners rm 4C24 CP2..... 557-1988

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Assistant Commissioner Theresa A. Brelsford rm 11C34 CP3..... 557-2290
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Deputy Assistant Commissioner for Administration Wesley H. Gewehr rm 11C34 CP3. 557-3055
Secretary Tresea Robinette rm 11C34 CP3..... 557-3055
Program Analyst Joan S. Griffey rm 11C34 CP3..... 557-2290

Office of General Services
Director John D. Hassett Lobby CP1..... 557-0183
Secretary Peggy Fewell Lobby CP1..... 557-0183
Deputy G. William Richardson Lobby CP1..... 557-0183
Correspondence and Mail Division Alvin Durham rm 1A03 CP2..... 557-2932
Deputy Willie Bowman rm 1A03 CP2..... 557-1689
Outgoing Mail Branch Lawrence Ford rm 1A05 CP2..... 557-3233
Incoming Mail Branch Sallye Rayford rm 1B03 CP2..... 557-3232
Correspondence Branch Mary Allen rm 1A03 CP2..... 557-3226
Facilities Management Division William Frye Lobby CP1..... 557-7870
Records and Property Management Branch Janice Pickering
Lobby CP6..... 557-0410
Space and Telecommunications Branch Ed Bogdan rm 509 CP1..... 557-7331
Office Services Division Constant G. Fearing Lobby CP1..... 557-3326
Procurement and Travel Branch Janice Carter Lobby CP1..... 557-0014
Support Services Branch Chief Luther Campbell FERN..... 557-3560
Transportation Unit Wallace Hall FERN..... 557-1531
File Information Unit Jacqueline Waldo (Acting) Lobby CP4..... 557-2977

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Director Frank V. Caesar rm 7D25 CP2..... 557-3236
Secretary Norma L. Watson (Acting) rm 7D25 CP2..... 557-3236
Deputy Michael Baggage rm 7D25 CP2..... 557-3236
Public Service Center C. Griffen rm 2C24 CP3..... 557-5168
Secretary Juanita G. Baker rm 2C24 CP3..... 557-5168
Patent Search Division Bernard Thomas rm 1A03 CP3..... 557-2219
Secretary Barbara Evans rm 1A03 CP3..... 557-2276
Patent Search Room rm 1A03 CP3..... 557-2277
Micrographics Branch (Commerce) Al Mundy..... 377-4968
Micrographics Branch (Crystal) Calvin Pullen..... 557-3079
Program Control Division (Vacant)..... 557-3236
PCT International Services Mary E. Turowski rm 7A04 CP2..... 557-2003
Examination Services Division Peggy Dubose rm 7E30 CP2..... 557-3256
Secretary Rebecca Faulkins rm 7E30 CP2..... 557-3717
Application Branch
Classification and Routing Unit John H. Crawley rm 7C12 CP2..... 557-3855
Administrative Examination Unit M. Montgomery rm 7C10 CP2..... 557-3254
Special Handling Unit Arthur Stephens rm 7C20 CP2..... 557-3831
Data Input, Quality Control, and Assembly Unit
Everette Oliver rm 7E28 CP2..... 557-3716
Re-Examination Pre-processing Unit L. Batchelor rm 7C20 CP2..... 557-1562
Assignment Branch Emmanuel J. DeMesme, rm 7D13 CP2..... 557-3266
Deputy Annie Harrell rm 7D13 CP2..... 557-3266
Secretary Voilet A. McCoy rm 7D13 CP2..... 557-3266
Examination Unit Virginia Clark rm 7D13 CP2..... 557-3247
Digest and Recording Unit Fred L. Bennett rm 7D13 CP2..... 557-3259
Title Unit Patricia A. Alexander rm 2C32 CP4..... 557-3826
Certification Branch Aberdeen Cutler 1627 HCHB..... 377-2270
Certification Section Lannie Anderson 1627 HCHB..... 377-4849
Input Records and Control Mary Grose 1627 HCHB..... 377-3359
Microfiche and Printing Catherine Jones 1627 HCHB..... 377-4401
Court and Documentation Gladys Dorsey rm 7C20 CP2..... 557-3831

Office of Personnel
Personnel Officer Carolyn P. Acree rm 920 CM2..... 557-2662
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Employee Development Division Mary Anna Culkin rm 320 CM2..... 557-3431
Operations Division Beverly Boykin rm 900 CM2..... 557-1208

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Secretary Gloria J. Coffey rm 6C07 CP2,..... 557-3794
Deputy Director Richard A. Bawcombe rm 6C07 CP2..... 557-9737
Publishing Division Ruth C. Mason rm 6C17 CP2..... 557-3283
Deputy Manager Sylvia F. Martin 6C17 CP2..... 557-6388
Allowed Files and Assembly Branch Yvette E. Simms rm 6C30 CP2..... 557-6395
Production Control Branch Willard D. Ireland rm 6C14 CP2..... 557-6412
Editorial Branch Marthina Thompson rm 6C06 CP2..... 557-6393
Data Base Query Section Gail Wooten rm 6C06 CP2..... 557-6392
Patent Copy Inspection Section Annie Kelly rm 6C06 CP2..... 557-6390
Drafting Branch Burton P. Shields rm 6C30 CP2..... 557-6404
Statistical Analysis Division Michael Stellabotte rm 6C07 CP2 557-1963
Data Base Inspection Branch Melvinia Gary rm 6C10 CP2..... 557-6416
Certificates of Corrections Branch Delores Cherry rm 7C18 CP2..... 557-0709
Technical Development Division Edwin P. Hall (Acting) rm 6C07 CP2..... 557-1992

Office of Equal Employement Programs
Director R. Jacqueline Dees rm 10D16 CP3..... 557-1692
Secretary Denise Walker rm 10D16 CP3..... 557-1692
Complaints Division Chief Rhoda K. Kluge rm 10D14 CP3..... 557-1692
EEO Specialist (Complaints) Charles E. Deskins rm 10D16 CP3..... 557-1692
EEO Clerk (Complaints) Robin Mitchell rm 10D16 CP3..... 557-1692

Office of Management and Organization
Director Sara E. Bjorge rm 927 CM2..... 557-5825
Secretary Mary Jane Bowman rm 927 CM2..... 557-5825
Team Leaders
Alvin Dorsey rm 927 CM2..... 557-5825
Jean E. Buckhout rm 927 CM2..... 557-5825
Greg P. Mullen rm 927 CM2..... 557-5825

OFFICE OF THE ASSISTANT COMMISSIONER FOR FINANCE AND PLANNING
Assistant Commissioner Bradford R. Huther rm 11D27 CP3..... 557-1572
Secretary Vickie T. Bryant rm 11D27 CP3..... 557-1572

Office of Budget, Planning and Evaluation
Director James R. Lynch rm 2C32 CP3..... 557-3875
Chief, Execution and Control Division Harold E. Buswell 2C32 CP3..... 557-3817
Chief, Programs and Budget Division Aris G. Harrison rm 2C32 CP3..... 557-3817

Office of Finance
Director Leonard L. Nahme rm 2C32 CP3..... 557-3051
Secretary Virginia R. Clark rm 2C32 CP3..... 557-3051
Deputy Director L. Jack Ell rm 2C32 CP3..... 557-3051
Appropriation Accounting Division Thomas L. Gass rm 2C33 CP3..... 557-2983
Fee Accounting Division Frank S. Lane Sr. rm 1B01 CP2..... 557-3230
Deposit Account Branch Delores H. Riley rm 1B01 CP2..... 557-3227
Financial Management Division (Acting) Robert M. Kopson rm 2C32 CP3.... 557-4276

Administrator for Automation
Administrator J. Howard Bryant rm 1108 CP6..... 557-6000
Secretary (Vacant) rm 1108 CP6..... 557-6024
Director Automation Program Control Group
A. J. Barsanti rm 1108 CP6..... 557-6009
Secretary Donna Powers rm 1108 CP6..... 557-6010
Director, Plan, Administration and Support
Douglas F. Cunha rm 1108 CP6..... 557-6015
Director, Automation Plan Control
Sanford Zarkin rm 1108 CP6..... 557-6016

Office of Technology, Assessment and Forecast
Director John Terapane rm 1225 CP6..... 557-4114
Secretary Judy Dickie rm 1225 CP6..... 557-4114

Office of Automation Concepts Implementation
Director Don W. LeCrone rm 1142 CP6..... 557-6156
Secretary Audrey Jackson rm 1142 CP6..... 557-6157

Office of Image and Information System
Director L Liddle rm 1142 CP6..... 557-6154
Secretary Debbie Blackwell rm 1142 CP6..... 557-6154

Office of Systems Engineering and Telecommunications
Director John J. Cochran rm 5D05 CP2..... 557-7862
Secretary Carol Lemieux rm 5D05 CP2..... 557-7862

Office of ADP
Director William J. Haykrantz rm 5D05 CP2..... 557-3646
Program Assistant Sylvia A. Huffman rm 5D05 CP2..... 557-3646
Deputy Director John F. Fancovic rm 5D05 CP2..... 557-3646
ADP Trademarks & Administration Division Raymond R. Rahn rm 5D05 CP2... 557-6330
ADP Operations Division Donald Tynes rm 100 North CM1..... 557-1071
Production Control Branch Betty J. Wilson rm 100 North CM1..... 557-1071
Computer Operations Branch Louise Hill rm 100 North CM1..... 557-1071
ADP Patent Division Raymond R. Rahn (Acting) rm 5D05 CP2..... 557-6332

CM1	Crystal Mall 1, 1911 Jefferson Davis Highway
CM2	Crystal Mall 2, 1921 Jefferson Davis Highway
CP1	Crystal Plaza 1, 2001 Jefferson Davis Highway
CP2	Crystal Plaza 2, 2011 Jefferson Davis Highway
CP3	Crystal Plaza 3, 2021 Jefferson Davis Highway
CP4	Crystal Plaza 4, 2121 Jefferson Davis Highway
CP6	Crystal Plaza 6, 2221 Jefferson Davis Highway
CP34	Crystal Plaza 34, 2021 Jefferson Davis Highway
CS4	Crystal Square 4, 1745 Jefferson Davis Highway
CS5	Crystal Square 5, 1755 Jefferson Davis Highway
CG2	Crystal Gateway 2, 1225 Jefferson Davis Highway
EADS	1232 South Eads Street
FERN	1411 South Fern Street
HCHB	Herbert C. Hoover Building, 14th & Constitution Avenue, N.W.

CUMULATIVE DIRECTORY OF CHANGES AS OF 06/05/84 PAGE 1

ORG	NAME	NEW ROOM #	NEW PHONE
110	GROUP RECEPTIONIST	CP03-09C17	557-2517
120	GROUP RECEPTIONIST	CP02-09C13	557-3920
130	GROUP RECEPTIONIST	CP03-08C17	557-2475
150	GROUP RECEPTIONIST	CP02-11C19	557-6525
210	GROUP RECEPTIONIST	CP04-09C17	557-2887
220	GROUP RECEPTIONIST	CP04-10C17	557-2478
230	GROUP RECEPTIONIST	CP04-11C17	557-2878
240	GROUP RECEPTIONIST	CP04-07C17	557-2900
250	GROUP RECEPTIONIST	CP04-08C17	557-2671
260	GROUP RECEPTIONIST	CP04-05C17	557-3371
290	GROUP RECEPTIONIST	CP04-10C17	557-2863
310	GROUP RECEPTIONIST	CP03-05C17	557-3618
320	GROUP RECEPTIONIST	CP03-06C17	557-3694
330	GROUP RECEPTIONIST	CP04-04C17	557-3125
340	GROUP RECEPTIONIST	CP04-03C17	557-3128
350	GROUP RECEPTIONIST	CP03-04C17	557-6200
327	ABERCROMBIE WILLE	CP03-06D07	557-6494
322	ABRAMS NEIL	CP03-06D21	557-3689
125	ABRAMSON FREDA L	CP02-08A01	557-3920
211	ADAMS RUSSELL E	CP04-09B26	557-2903
136	ADEE JOHN W	CP03-08B30	557-2475
330	AEGERTER RICHARD	CP04-04D19	557-3330
157	ALBRECHT DENNIS	CP02-10A18	557-6525
213	ALBRITTON CLARENCE L	CP04-09A07	557-5050
317	ALEXANDER DANIEL R	CP03-04D27	557-3618
AUD	ALLAIRD DAVID	CP03-09B15	557-3602
133	ALVO M. STEVEN	CP03-07B26	557-2475
254	ANAGNOS LARRY N	CP04-07B34	557-7617
256	ANDERSON BRUCE	CP04-08B36	557-2776
345	ANDERSON GERALD	CP04-03E10	557-3214
153	ANDERSON HAROLD	CP02-10B14	557-6525
137	ANDERSON PHILIP E	CP03-08A13	557-2475
291	ANDERSON RUTH M	CP04-11C04	557-2863
216	ANDREWS GEORGE E. R	CP04-08C03	557-2776
111	ANDREWS MELVYN J	CP03-10B36	557-6721
112	ANDREWS RICHARD L	CP03-09B24	557-2517
352	ANDREWS STEPHEN B	CP03-03E06	557-6200
292	ANSHER BERNARD	CP04-10D03	557-2863
A/C	ANTONAKAS MANUEL A	CP03-10A15	557-8384
332	APLEY RICHARD	CP04-04E16	557-3501
326	ARBES CARL	CP03-07D29	557-6509
342	ARGENBRIGHT TONY	CP04-02D11	557-5701
257	ARNOLD BRUCE Y	CP04-08D27	557-3107
351	AROLA DAVE W	CP03-04A13	557-6200
OPP	ARRINGTON CAROLYN S	CP03-10B08	557-9184
243	ARTIS HENRY K	CP04-06B20	557-3301
357	ASCHENBRENNER PETER A	CP03-04A03	557-6200
215	ASKIN LARAMIE	CP04-09D27	557-5070
236	ATKINSON CHARLES E	CP04-11E12	557-2875
154	ATKINSON WILLIAM	CP02-11E15	557-6525
212	AULT ANITA M	CP04-09B04	557-5050

CUMULATIVE DIRECTORY OF CHANGES AS OF 06/05/84 PAGE 2

ORG	NAME	NEW ROOM #	NEW PHONE
255	AUSTIN ERNEST	CP04-08D21	557-2627
322	AUSTIN PAULA A	CP03-06D23	557-6025
114	AUYANG HUNTER L	CP03-10E08	557-6726
315	AVILA STEPHEN P	CP03-06A09	557-3618
155	BABAJKO SUZANNE	CP02-10E05	557-6525
PET	BABINGTON KAREN D	CP03-11B08	557-4282
331	BAGWILL ROBERT	CP03-03B02	557-3401
240	BAILEY DORETHA	CP04-07C17	557-2901
342	BAILEY R. S	CP04-02C06	557-0352
131	BALL MICHAEL W	CP03-07B02	557-2475
315	BAREFOOT GALEN L	CP03-06B02	557-3618
314	BARLOW JAMES E	CP03-05B20	557-3618
157	BARR JOSEPHINE	CP02-10B02	557-6525
222	BARRON GILBERTO JR	CP04-09B14	557-5050
213	BARTIS ANTHONY	CP04-09D03	557-5070
311	BARTUSKA FRANCIS J	CP03-05B08	557-3618
315	BARTZ CLIFFORD T	CP03-06C07	557-3618
133	BASCOMB WILBUR L	CP03-07B36	557-2475
133	BASHORE S. LEON	CP03-07E02	557-2475
315	BASINGER SHERMAN D	CP03-06A03	557-3618
325	BATTEN REED	CP03-07D09	557-6524
332	BEAUCAGE GREGORY	CP04-04C33	557-3144
152	BECK SHRIVE	CP02-11A12	557-6525
137	BECKER MARY A	CP03-08D13	557-2475
352	BEDNAREK MICHAEL D	CP03-03E08	557-6200
212	BEHA WILLIAM	CP04-09A05	557-5050
221	BEHREND HARVEY E	CP04-10D35	557-2894
243	BELL HOUSTON S. JR	CP04-06B28	557-3221
354	BELL J. KARL	CP03-03D29	557-6200
154	BELL JAMES	CP02-11D24	557-6525
152	BELL JANYCE	CP02-11B08	557-6525
118	BELL MARK L	CP03-09B36	557-2517
327	BELL PAUL	CP03-06D03	557-6492
312	BELTRAN HOWARD	CP03-04D13	557-3618
344	BENNETT HENRY	CP04-03D03	557-0900
221	BENTLEY STEPHEN C	CP04-10D25	557-2894
122	BERCH MARK L	CP02-08B24	557-3920
217	BERGMANN SAUL	CP04-09E04	557-5080
256	BERMAN JACK I	CP04-08B32	557-2884
134	BERNSTEIN HIRAM H	CP03-09B06	557-2475
254	BERTELSON DAVID R	CP04-07C33	557-3451
316	BERTSCH RICHARD A	CP03-05E08	557-3618
322	BILINSKY ZENON R	CP03-06E16	557-3729
357	BINDER MARK	CP03-04B13	557-6200
265	BIRMIEL HOWARD A	CP04-06E06	557-3221
322	BISHOP STEVEN C	CP03-06D25	557-1953
121	BJORKMAN DALE	CP02-09D13	557-3920
234	BLACK THOMAS G	CP04-11B30	557-2801
210	BLAKE CHARLES B	CP04-09C30	557-2887
151	BLEUTGE JOHN	CP02-10D02	557-6525
243	BLEUTGE ROBERT C	CP04-06B18	557-3301

CUMULATIVE DIRECTORY OF CHANGES AS OF 06/05/84 PAGE 3

ORG	NAME	NEW ROOM #	NEW PHONE
315	BLIX TRYGVE M.	CP03-06A01	557-3618
222	BLUM THEODORE M.	CP04-10E06	557-2897
112	BOGGS BRUCE J. JR.	CP03-09B18	557-2517
131	BOKAN THOMAS E.	CP03-07A09	557-2475
131	BOLAND LOIS E.	CP03-07A15	557-2475
352	BONCK RODNEY H.	CP03-04B14	557-6200
129	BOND ROBERT T.	CP02-09B12	557-3920
135	BOND WILLIAM J.	CP03-08E06	557-2475
263	BOOKBINDER MARC E.	CP04-05B38	557-3317
124	BOSKA JOSEPH A.	CP02-08E14	557-3920
266	BOUDREAU LEO H.	CP04-05A13	557-3357
257	BOVERNICK RODNEY	CP04-08D31	557-3107
156	BOWERS CHARLES	CP02-11E04	557-6525
345	BOWMAN BRIAN	CP04-03B30	557-3467
133	BOYER MICHAEL K.	CP03-07B34	557-2475
341	BRADLEY ABRAM	CP04-03B31	557-3467
261	BRADY WADE J.	CP04-05B08	557-3321
315	BRAHAN THOMAS J.	CP03-06A09	557-3618
156	BRAMMER JACK	CP02-11E12	557-6525
340	BRATLIE SHERRY	CP04-03D19	557-3340
332	BRATLIE STEVEN	CP04-04D33	557-3501
357	BRATTAIN JAMES	CP03-04A07	557-6200
215	BRAUN FRED L.	CP04-09B36	557-2903
352	BRAUN LESLIE A.	CP03-03E16	557-6200
321	BRAY WAYMOND D.	CP03-06B28	557-6046
264	BRIGANCE GERALD L.	CP04-05D35	557-3354
151	BRIGGS WILBERT J.	CP02-10E14	557-6525
322	BRIGGS WILLIAM R.	CP03-06E12	557-6033
121	BRISCOE KURT G.	CP02-09D15	557-3920
262	BRITTON HOWARD W.	CP04-05B24	557-3317
355	BRITTS RAMON S.	CP03-04E02	557-6200
111	BRODY CHRISTOPHER W.	CP03-10B18	557-5145
223	BROOKES ANNE E.	CP04-10B24	557-2037
216	BROOME HAROLD	CP04-08A03	557-2735
255	BROPHY J. JON	CP04-08D01	557-2735
211	BROWN BRIAN W.	CP04-09B20	557-2903
221	BROWN DAVID H.	CP04-10E12	557-2894
332	BROWN DAVID	CP04-04D27	557-3131
123	BROWN JOHNNIE R.	CP02-08D05	557-3920
155	BROWN NAN	CP02-11C05	557-6525
357	BROWN PETER	CP03-04C07	557-6200
334	BROWN SCOTT	CP04-04B10	557-3137
334	BROWN THEATRICE	CP04-04A03	557-3137
261	BROWN THOMAS W.	CP04-05B04	557-3321
156	BROWN TRAVIS J.	CP02-11E08	557-6525
332	BROWNE WILLIAM	CP04-04D37	557-3501
121	BRUST JOSEPH PAUL	CP02-09A15	557-3920
243	BRYANT JAMES E. III	CP04-06B24	557-3221
317	BUCCI DAVID A.	CP03-05D27	557-3618
222	BUCZINSKI STEPHEN C.	CP04-10E10	557-2897
212	BUDD MARK	CP04-09B06	557-5050

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ORG	NAME	NEW ROOM #	NEW PHONE
152	BUEKER RICHARD	CP02-11B04	557-6525
154	BUFFALOW EDITH	CP02-11D12	557-6525
356	BUI THUY M	CP03-04E06	557-6200
291	BULLOCK BARBARA J	CP04-10D01	557-2863
291	BURKE WALLACE R	CP04-10B04	557-2912
342	BURNS WENDELL	CP04-02D07	557-5702
337	BURR EDGAR	CP03-03D01	557-3402
326	BURTCH JOHN	CP03-07D11	557-6523
153	BUSH LILLIAN	CP02-10A21	557-6525
314	BUTLER DOUGLAS C	CP03-05B26	557-3618
356	BYERS NILE C	CP03-04D33	557-6200
261	BYRD DANITA R	CP04-05A07	557-3357
220	CAGE KENNETH L	CP04-10D17	557-2877
116	CALDAROLA GLENN A	CP03-09D25	557-6687
264	CALDWELL JOHN W	CP04-05E16	557-3354
351	CALLAGHAN THOMAS F	CP03-04D03	557-6200
254	CALLAHAN TIMOTHY P	CP04-07E02	557-7617
344	CAMBY JOHN	CP04-03A15	557-0900
OED	CAMPEL DONNA P	CP04-11D37	557-2012
222	CANGIALOSI SALVATORE A	CP04-10B17	557-2894
235	CANNEY VINCENT P	CP04-11D21	557-2867
154	CANNON JAMES	CP02-11D20	557-6525
113	CAPELLA STEVEN	CP03-09D07	557-6715
344	CAPOSSELA RONALD	CP04-03A11	557-0900
235	CARDILLO RAYMOND F. JR	CP04-11D13	557-2867
223	CARESS VIRGINIA B	CP04-10E02	557-2037
133	CAROFF MARC L	CP03-07B28	557-2475
134	CARRIER JOSEPH P	CP03-09B11	557-2475
151	CARRILLO ANA	CP02-10E09	557-6525
253	CARROLL JAMES J	CP04-07A01	557-2913
314	CARROLL JOHN A	CP03-05B16	557-3618
113	CARTER HERBERT T	CP03-09D01	557-2517
343	CASAREGOLA LOUIS	CP04-03B08	557-3464
131	CASHION MERRELL C	CP03-07A07	557-2475
136	CASTEL BENOIT	CP03-08B34	557-2475
355	CAUN PETER M	CP03-04B32	557-6200
347	CHAMBERS A	CP04-03D31	557-3471
333	CHAMBLEE HUGH	CP04-04D07	557-3131
237	CHAN EDDIE P	CP04-11E04	557-2064
123	CHAN NICKY	CP02-08A09	557-3920
265	CHAPMAN JOHN E	CP04-06E12	557-3204
112	CHAPMAN TERRYENCE F	CP03-09B20	557-2517
266	CHATMON SAXFIELD JR	CP04-04A05	557-3321
116	CHAUDHURI OLIK	CP03-09D25	557-6688
313	CHERRY JOHNNY D	CP03-05D03	557-3618
135	CHIESA RICHARD L	CP03-08D31	557-2475
152	CHILDS SADIE	CP02-11B10	557-6525
234	CHIN GARY	CP04-11B16	557-2871
291	CHIN KAY H	CP04-11C26	557-2863
133	CHIN PETER	CP03-07B24	557-2475
263	CHIN STEPHEN	CP04-05B32	557-3317

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ORG	NAME	NEW ROOM #	NEW PHONE
262	CHIN TOMMY P	CP04-05B20	557-3317
263	CHIN WELLINGTON	CP04-05B26	557-3317
355	CHIN-SHUE ALVIN C	CP03-04B24	557-6200
245	CHRISTIAN LEONARD D	CP04-07D31	557-3451
256	CHURCH CRAIG E	CP04-08B34	557-2776
265	CIARLANTE ANTHONY V	CP04-06E08	557-3204
136	CINTINS IVARS C	CP03-08B22	557-2475
232	CLARK DAVID L	CP04-11A01	557-2871
253	CLARK SHELIA V	CP04-07A09	557-2913
126	CLARKE VERA C	CP02-09B16	557-3920
253	CLAWSON JOSEPH E. JR	CP04-07B10	557-3311
346	CLINE WILLIAM	CP04-02B02	557-5679
157	CLINGMAN LIONEL	CP02-10A12	557-6525
327	COAN JAMES	CP03-06D09	557-6495
153	COCKERAM HERBERT	CP02-10B22	557-6525
242	COE PHILIP R	CP04-07D07	557-3451
347	COHAN ALAN	CP04-03D29	557-3471
341	COHEN IRWIN	CP04-03B20	557-3464
335	COHEN LEE	CP04-04B34	557-3144
337	COHEN MOSHE	CP34-03D61	557-3214
136	COHEN SHARON T	CP03-08E02	557-2475
262	COLES EDWARD L	CP04-05B12	557-3321
321	COMBS ERVIN M	CP03-06E04	557-6038
333	CONTRERAS WENCESLAO	CP04-04A15	557-3131
OPP	COOK ALMIRA J	CP03-10B10	557-4213
113	COOPER JACK	CP03-09A01	557-2517
332	COPPENS CHRIS	CP04-04D39	557-3501
132	CORBIN ARTHUR L	CP03-08D05	557-2475
351	CORBIN DAVID H	CP03-04A11	557-6200
257	CORBIN JOHN	CP04-08D33	557-3107
315	CORL RODNEY A	CP03-06A07	557-3618
221	CORNWELL DAVID K	CP04-10E12	557-2894
246	CORR DENIS E	CP04-06D17	557-3204
292	CORRIGAN JANE E	CP04-10A05	557-2911
234	COSIMANO EDWARD R	CP04-11C28	557-2801
337	COUGHENOUR CLYDE	CP03-03D05	557-3401
122	COUGHLAN PAUL M. JR	CP02-08E06	557-3920
335	COVEN EDWARD	CP04-04B36	557-3144
129	COVINGTON RAYMOND K	CP02-09B08	557-3920
342	COX RONALD	CP04-02D09	557-5703
321	CRANE DANIEL C	CP03-06B32	557-6043
325	CROSBY GENE	CP03-07D05	557-1899
268	CROSLAND DONNIE L	CP04-05E12	557-3354
342	CROSS ETHEL	CP04-02A15	557-5691
332	CROW STEPHEN	CP04-04D29	557-3501
337	CROWDER CLIFFORD	CP03-03D03	557-3401
343	CROYLE CARLTON	CP04-03B02	557-3464
342	CUCHLINSKI WILLIAM	CP04-02A11	557-5695
327	CULVER HORACE	CP03-06D11	557-6496
343	CUOMO PETER	CP04-03C04	557-3464
132	CURTIN ELIZABETH J	CP03-08D23	557-2475

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ORG	NAME	NEW ROOM #	NEW PHONE
264	CURTIS MARSHALL M.	CP04-05D37	557-3354
243	CUSICK ERNEST G.	CP04-06B22	557-3221
137	CZAJA DONALD E.	CP03-08A01	557-2475
136	CZAJA JOHN W.	CP03-08C05	557-2475
313	CZAJA MARY F.	CP03-05A15	557-3618
242	DAHLBERG ARTHUR D.	CP04-07D21	557-3451
137	DAILEY PATRICK M.	CP03-08B09	557-2475
154	DALGEWICZ EDWARD	CP02-11E15	557-6525
336	DALGEWICZ EDWARD	CP04-04B13	557-3144
356	DANG HOANG	CP03-04E08	557-6200
323	DASCHEL MATTHEW D.	CP03-07D08	557-6485
122	DAUS DONALD G.	CP02-08B32	557-3920
251	DAVIE JAMES W.	CP04-08E06	557-2627
346	DAVIS ALBERT	CP04-02B12	557-5684
PET	DAVIS ANGOLOIS	CP03-11C13	557-4282
254	DAVIS BERNARD P.	CP04-07B30	557-7617
116	DAVIS CURTIS R.	CP03-09D29	557-6697
250	DAVIS JD ANN	CP04-08C17	557-2671
221	DAVIS TYRONE	CP04-09B14	557-5050
131	DAWSON ROBERT A.	CP03-07A05	557-2475
111	DEAN RICHARD D.	CP03-10B20	557-5146
214	DEBOER TODD E.	CP04-08B22	557-2767
128	DECK RANDY	CP02-08D07	557-3920
116	DEES CARL F.	CP03-09D09	557-2517
156	DEES JOSE G.	CP02-11E13	557-6525
EEO	DEES R. JACQULINE	CP03-10D17	557-1692
356	DELSIGNORE MARK J.	CP03-04E10	557-6200
266	DELUCA VINCENT M.	CP04-04A09	557-3357
266	DEMEO PALMER C.	CP04-04A07	557-3357
112	DEMERS ARTHUR P.	CP03-09B16	557-6681
331	DEMILLE DANTON	CP03-03B18	557-2172
121	DENTZ BERNARD I.	CP02-09D17	557-3920
137	DERRINGTON JAMES H.	CP03-08B02	557-2475
290	DESIGN LIBRARY	CP04-10C06	557-....
EEO	DESKINS CHARLES E.	CP03-10D24	557-1692
322	DESMOND EUGENE F.	CP03-06D27	557-6027
330	DESMUKES CLAIR	CP04-04D13	557-3131
314	DIEFENDORF RICHARD R.	CP03-05B24	557-3618
352	DIEHL DWIGHT	CP03-03E11	557-6200
266	DIXON HAROLD A.	CP04-04A13	557-3357
118	DIXON WILLIAM R. JR.	CP03-09E06	557-6698
241	DIXSON WILLIAM T. JR.	CP04-06B06	557-3301
217	DOBECK BENJAMIN	CP04-09D39	557-5080
245	DOIGAN LLOYD D.	CP04-07D33	557-3451
342	DOLINAR ANDREW	CP04-02A13	557-5694
113	DOLL JOHN	CP03-09A15	557-2517
136	DONOFRIO JOHN	CP03-08B36	557-2475
345	DORITY CARROLL	CP04-03B40	557-3467
356	DORNER KENNETH	CP03-03B34	557-6200
237	DORSEY DANIEL K.	CP04-11B34	557-2801
230	DORSEY LAURA	CP04-11D19	557-5088

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ORG	NAME	NEW ROOM #	NEW PHONE
A/C	DOST GERALD A.	CP03-10D11	557-8384
291	DOUGLAS ALAN P.	CP04-10B06	557-2911
112	DOUGLAS WINSTON A.	CP03-09E02	557-2517
357	DOWNEY KENNETH.	CP03-04B04	557-6200
156	DOWNEY MARY.	CP02-11B28	557-6525
153	DRAPER GARNETTE.	CP02-10C05	557-6525
358	DUBNICKA THOMAS J.	CP03-03B32	557-6200
210	DUGAN TERESA E.	CP04-09D19	557-2488
212	DUGGAN DONOVAN.	CP04-09B12	557-5050
217	DUNCANSON WILLIAM E. JR.	CP04-09E12	557-5080
292	DUNKINS BRUCE W.	CP04-10D09	557-2864
261	DWYER JAMES L.	CP04-05A05	557-3321
257	DZIERZYNSKI PAUL M.	CP04-08E16	557-2627
122	EAKIN MARY C.	CP02-08B22	557-3920
326	ECHOLS PERCY.	CP03-07D25	557-6511
313	EDELBROCK DANIEL R.	CP03-05D11	557-3618
253	EDLOW MARTIN H.	CP04-07A05	557-2913
267	EDMONDS WARREN S.	CP04-05D27	557-3354
241	EHRHARDT BRENDA J.	CP04-06A03	557-3306
337	EICKHOLT EUGENE.	CP34-03D51	557-3214
214	EISENZOPF REINHARD J.	CP04-08B10	557-2765
326	ELEY TIMOTHY.	CP03-07D21	557-6518
241	ELKINS GARY E.	CP04-06A01	557-3304
247	ELLIS MARY A.	CP04-06A07	557-3304
A/C	EMERY STEPHAN J.	CP03-10D05	557-8384
232	ENG DAVID Y. P.	CP04-11B06	557-2875
210	ENGLE SAMUEL W.	CP04-09D19	557-2488
214	ENVALL ROY N. JR.	CP04-08B18	557-2767
156	EPSTEIN HENRY.	CP02-11B30	557-6525
333	ESKOVITZ JAY.	CP04-04D11	557-3131
216	EVANS ARTHUR G.	CP04-08A13	557-2735
255	EVANS F. L.	CP04-08D23	557-2627
213	EVANS GEOFFREY S.	CP04-09A15	557-5070
126	EVANS JOSEPHE.	CP02-09B22	557-3920
235	FABER ALAN.	CP04-11D25	557-2875
134	FAETH LISA E.	CP03-09B11	557-2475
131	FALASCO LOUIS	CP03-07A11	557-2475
247	FALIK ANDREW.	CP04-07D25	557-3451
357	FALK JOSEPH S.	CP03-04A05	557-6200
335	FALK STEVEN.	CP04-04E10	557-3501
121	FAN JANE T.	CP02-09D11	557-3920
123	FARACI CIRO J.	CP02-08A07	557-3920
222	FARLEY RICHARD A.	CP04-10B40	557-2897
127	FASSE PETER.	CP02-09E15	557-3920
344	FAVORS EDWARD.	CP04-03A13	557-0900
291	FAY HORACE E. JR.	CP04-10B02	557-2863
233	FEARS TERRELL W.	CP04-11D09	557-2867
120	FEDUCIA LINDA M.	CP02-09A09	557-3637
292	FEIFER MELVIN B.	CP04-10D07	557-2864
342	FEINBERG CRAIG.	CP04-02A05	557-5698
247	FELDBAUM RONALD.	CP04-06A09	557-3304

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ORG	NAME	NEW ROOM #	NEW PHONE
242	FELDMAN PETER	CP04-07D03	557-2913
OED	FELDMAN WILLIAM	CP04-11E16	557-2012
331	FEYRER JAMES	CP03-03B12	557-3401
241	FIDEI DAVID	CP04-07D23	557-3453
256	FIELDS CAROLYN E	CP04-08B30	557-2884
137	FISCHBACH VIRGINIA J	CP03-08B11	557-2475
351	FISCHETTI JOSEPH A	CP03-04A09	557-6200
337	FISHER J R	CP03-03D11	557-3414
136	FISHER RICHARD V	CP03-08B20	557-2475
345	FLANIGAN ALLEN	CP04-03E06	557-3471
236	FLEMING MICHAEL R	CP04-11D31	557-2064
215	FLOWER TERRANCE L	CP04-09D09	557-5070
345	FOCARINO MARGARET	CP04-03B32	557-3467
153	FOELAK MORTON	CP02-10B06	557-6525
335	FOLEY DIEDRE	CP04-04E12	557-3501
128	FOLEY SHAWN P	CP02-08D23	557-3920
245	FOOTLAND LENARD A	CP04-07D35	557-3451
EEO	FORD HENRY J	CP03-10D14	557-1692
121	FORD JOHN M	CP02-09D05	557-3920
354	FORD KATHRYN	CP03-03D25	557-6200
OED	FORD MARIAN E	CP03-10D27	557-1728
240	FORLENZA GERALD M	CP04-07D19	557-2906
313	FORMAN MICHAEL J	CP03-05D11	557-3618
355	FOSS J. FRANKLIN	CP03-04B26	557-6200
312	FOSTER GLENN B	CP03-04D14	557-3618
241	FOSTER JIMMY G	CP04-06A01	557-3304
216	FOSTER PATRICK W	CP04-08A11	557-2735
347	FOX JOHN	CP04-03D39	557-3214
236	FRANK CHARLES E	CP04-11E13	557-2064
246	FRANKFORT CHARLES E	CP04-06D17	557-3204
211	FRANKLIN LAWRENCE R	CP04-09D29	557-5070
343	FREEH WILLIAM	CP04-03A07	557-0900
324	FRIDIE WILLMON	CP03-06B24	557-6049
354	FRIEDMAN CARL D	CP03-03D31	557-6200
125	FRIEDMAN STANLEY J	CP02-08B08	557-3920
332	FRINKS RONALD	CP04-04D35	557-3501
316	FUGATE D. LYNN	CP03-05B15	557-3618
335	FUKUSHIMA CHRISTINE	CP04-04E12	557-3501
211	FULLER BENJAMIN R	CP04-09B24	557-2903
157	GADDIS MARSHALL	CP02-11C05	557-6525
358	GALL LLOYD A	CP03-03B30	557-6200
131	GALLAGHER JOHN J	CP03-07A13	557-2475
257	GALLIVAN RICHARD F	CP04-08C35	557-3107
291	GANDY JAMES M	CP04-10A07	557-2911
116	GANTZ DELBERT E	CP03-09D35	557-3029
241	GARBE STEPHEN P	CP04-06B08	557-3301
235	GARLAND STEVEN R	CP04-11D10	557-2867
126	GARNER VIVIAN	CP02-09B18	557-3920
341	GARRETT ROBERT	CP04-03B22	557-3465
138	GARRIS BRADLEY R	CP03-08B06	557-2475
116	GARVIN PATRICK P	CP03-09D11	557-2622

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ORG	NAME	NEW ROOM #	NEW PHONE
257	GASS REBECCA D.	CP04-08D39	557-3107
241	GEHMAN BRYON P.	CP04-07D23	557-3453
211	GELLNER MICHAEL L.	CP04-09B28	557-2903
252	GENSLER PAUL.	CP04-07B20	557-3311
261	GEORGE KEITH E.	CP04-05A09	557-3357
122	GERSTL ROBERT.	CP02-08B26	557-3920
355	GIBSON ROBERT W. JR.	CP03-04B36	557-6200
122	GIBSON SHARON A.	CP02-08B30	557-3920
268	GIEBEL JAMES R.	CP04-06E16	557-2921
314	GILDAY M. P.	CP03-05B22	557-3618
321	GILDEN LEON.	CP03-06E06	557-6037
265	GILL JAMES J.	CP04-06B38	557-3221
A/C	GILLEN NANCY A.	CP03-11B02	557-3054
245	GILREATH STANLEY N.	CP04-07D39	557-3451
214	GINSBURG MORRIS.	CP04-08B20	557-2767
291	GITLIN SUZANNE N.	CP04-10D01	557-2863
343	GLUCK RICHARD.	CP04-03B04	557-3464
330	GODFREY THERESA.	CP04-04D17	557-3330
325	GODICI NICHOLAS.	CP03-07D01	557-6513
216	GOLDBERG ELLIOT A.	CP04-08B02	557-2765
265	GOLDBERG GERALD.	CP04-06E02	557-3221
326	GOLDBERG HOWARD.	CP03-07D17	557-6520
125	GOLDBERG JEROME D.	CP02-08B06	557-3920
268	GOLDSTEIN HERBERT.	CP04-06E04	557-3221
132	GOLIAN JOSEPH M.	CP03-08D03	557-2475
352	GONET MICHAEL J.	CP03-03E10	557-6200
215	GONZALES JOHN.	CP04-09B32	557-2903
251	GONZALEZ FRANK.	CP04-07E06	557-7617
156	GOODROW JOHN.	CP02-11B32	557-6525
326	GORSKI JOSEPH.	CP03-07D12	557-6487
233	GOSSAGE GLENN.	CP04-11C03	557-2871
150	GRAHAM SHARON.	CP02-11A04	557-6525
247	GRAVELINE TRACY.	CP04-06A07	557-3304
310	GRAY BOBBY R.	CP03-05D17	557-3677
126	GRAY BRUCE D.	CP02-09E05	557-3920
234	GRAY J. RICHARD.	CP04-11C07	557-2881
OPP	GREEN JUNE D.	CP03-10B06	557-9183
345	GREEN RANDALL.	CP04-03B28	557-3467
263	GREER TIMONTHY K.	CP04-05B28	557-3317
334	GRIEB WILLIAM.	CP04-04B08	557-3137
211	GRIFFIN DONALD A.	CP04-09B30	557-2903
321	GRIFFIN JORJI M.	CP03-06B26	557-6047
263	GRIFFIN ROBERT L.	CP04-05E02	557-3317
155	GRIFFIN RONALD W.	CP02-10E04	557-6525
221	GRIFFITHS JOHN E.	CP04-10D21	557-2894
256	GRIGSBY THOMAS N.	CP04-08B38	557-2776
215	GRIMLEY ARTHUR.	CP04-09D25	557-5070
252	GRIMM S. H.	CP04-07B12	557-3311
223	GRON TEDDY S.	CP04-10B34	557-2037
264	GROODY JAMES J.	CP04-05D33	557-3354
358	GROSS ALEXANDER.	CP03-03E04	557-6200

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ORG	NAME	NEW ROOM #	NEW PHONE
127	GROSSMAN DEBORAH	CP02-09E13	557-3920
234	GRUBER FELIX D	CP04-11B14	557-2871
321	GURLEY DONALD M	CP03-06B30	557-6044
223	GUYNN HERBERT B	CP04-10B20	557-2037
134	GZYBOWSKI MICHAEL S	CP03-09B04	557-2475
331	HAFER ROBERT	CP03-03A01	557-3404
245	HAIL JOSEPH J	CP04-07E14	557-7617
312	HAJEC DONALD T	CP03-04D25	557-3618
333	HAKOMAKI JAMES	CP04-04C03	557-3137
326	HALL CARL	CP03-07D27	557-6510
241	HALL GEORGE T	CP04-06B14	557-3301
314	HALVOSA GEORGE E. A	CP03-05B14	557-3618
156	HAMILTON CYNTHIA	CP02-11E13	557-6525
311	HANDREN FREDERICK R	CP03-05A03	557-3618
256	HANIG RICHARD E	CP04-08B32	557-2884
335	HANLEY JOHN	CP04-04C35	557-3501
256	HANNAHER CONSTANTINE	CP04-08E02	557-2776
245	HANNON THOMAS R	CP04-07E08	557-7619
264	HARDING ELLWOOD G	CP04-05D29	557-3354
236	HARKCOM GARY V	CP04-11B28	557-2801
246	HARDIAN HARRY N	CP04-06D23	557-3204
216	HARRIS GEORGE	CP04-08A05	557-2735
OPP	HARRIS JO ANN	CP03-10B09	557-5148
260	HARRIS VIVIAN C	CP04-05D21	557-3371
332	HARRISON CAROLYN	CP04-04D29	557-3501
135	HART CHARLES N	CP03-08E16	557-2475
346	HART DOUGLAS	CP04-02B06	557-5681
216	HARTARY JOSEPH W	CP04-08B04	557-2765
323	HARTMAN JUDY J	CP03-07D08	557-6485
133	HASTINGS KAREN M	CP03-07B22	557-2475
132	HATCHER ELIZABETH A	CP03-08D25	557-2475
242	HAUGHLAND SCOTT J	CP04-07A11	557-2913
157	HAYES LORENZO	CP02-10A20	557-6525
211	HAYES MONROE HOWARD	CP04-09B34	557-2903
127	HAZEL BLONDEL	CP02-09D25	557-3920
251	HEALY BRIAN	CP04-08E05	557-2627
134	HEANEY BRION P	CP03-09B07	557-2475
114	HEARN BRIAN E	CP03-10D35	557-6728
127	HECK JEAN	CP02-09E15	557-3920
233	HECKER STUART N	CP04-11D01	557-2867
237	HECKLER THOMAS	CP04-11B37	557-2801
264	HEIM MICHAEL F	CP04-05D31	557-3354
233	HEINZ ALLEN J	CP04-11A13	557-2882
138	HEITBRINK TIMOTHY	CP03-07B12	557-2475
126	HELFIN BERNARD	CP02-09B30	557-3920
291	HELFLIN CLAIRE	CP04-11C04	557-2863
113	HELLER GREGORY A	CP03-09A09	557-6709
155	HENDERSON CHRISTOPHE	CP02-10E08	557-6525
122	HENDRICKS GLENNA M	CP02-08B28	557-3920
126	HENDRIKSEN LEAH	CP02-09B24	557-3920
257	HENRY JON W	CP04-08D37	557-2627

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ORG	NAME	NEW ROOM #	NEW PHONE
347	HEPPERLE STEPHEN	CP04-03E14	557-2901
128	HERALD WILLIAM	CP02-08D21	557-3920
154	HERBERT THOMAS	CP02-11E14	557-6525
352	HERRMANN ALLAN D	CP03-03E12	557-6200
292	HERRMANN WINIFRED E	CP04-10D11	557-2864
341	HERSHKOVITZ ABRAHAM	CP04-03B16	557-3464
154	HESS BRUCE	CP02-11D18	557-6525
114	HEY DAVID A	CP03-10E10	557-6727
254	HEYMAN JOHN S	CP04-07B38	557-7617
327	HEYRANA	CP03-06D13	557-1954
212	HICKEY ROBERT	CP04-09B10	557-5050
124	HIGEL FLOYD D	CP02-08D29	557-3920
350	HILL JOYCE	CP03-03D13	557-6200
316	HILL MITCHELL J	CP03-05B30	557-3618
134	HILL ROBERT J. JR	CP03-09B09	557-2475
OPP	HILLE ROLF G	CP03-10A01	557-9175
335	HINDENBURG MAX	CP04-04E06	557-3501
124	HINES ROBERT V	CP02-09A03	557-3920
337	HIRABAYASHI JAMES	CP34-03D55	557-3214
333	HIRSCH PAUL	CP04-04D05	557-3131
211	HIX L. T	CP04-09B40	557-2903
356	HJORTH BEVERLY E	CP03-04E10	557-6200
138	HOAG WILLARD E	CP03-08B04	557-2475
131	HOCH RAMON R	CP03-07A03	557-2475
325	HODAK MARC	CP03-07D13	557-6522
136	HODSON KAREN L	CP03-08E04	557-2475
152	HOFFMAN JAMES	CP02-11D26	557-6525
153	HOKE VERONICA	CP02-10B10	557-6525
358	HOLKO THOMAS J	CP03-03B26	557-6200
129	HOLLRAH GLENNON H	CP02-09A01	557-3920
317	HOLMES JONATHAN	CP03-05D33	557-3618
292	HOLTJE NELSON C	CP04-10D05	557-2863
331	HONAKER WILLIAM	CP03-03B16	557-2172
242	HORNSBY HARVEY C	CP04-07A15	557-2913
352	HOUSE DAVID D	CP03-04B18	557-6200
138	HOUSEL JAMES C	CP03-08C07	557-2475
356	HOVIS TIMOTHY	CP03-04C14	557-6200
118	HOWARD JACQUELINE V	CP03-09E12	557-2517
322	HOWELL DANIEL W	CP03-06D23	557-1952
256	HOWELL JANICE A	CP04-08B28	557-2884
335	HOWELL KYLE	CP04-04E02	557-3144
136	HRUSKOCI PETER A	CP03-08B24	557-2475
236	HUANG KARL	CP04-11D34	557-2878
312	HUBBUCH DAVID F	CP03-04D11	557-3618
222	HUBLER MALCOLM F	CP04-10C17	557-4210
254	HUDSPETH DAVID R	CP04-07B32	557-7617
127	HULEATT JAYME	CP02-09E12	557-3920
223	HUNT BROOKS H	CP04-10C17	557-6163
247	HUNTER H. HAMPTON	CP04-06D03	557-3304
132	HUNTER JEANETTE M	CP03-08D07	557-2475
311	HUPPERT MICHAEL S	CP03-05A07	557-3618

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ORG	NAME	NEW ROOM #	NEW PHONE
351	HUSAR CORNELIUS J	CP03-04D01	557-6200
321	HUSAR FRANCIS	CP03-06E02	557-6039
341	HUSAR JOHN	CP04-03B05	557-3464
346	HUSAR STEPHEN	CP04-02A03	557-5676
358	ILLICH RUSSELL W	CP03-03B28	557-6200
217	IP PAUL	CP04-09E06	557-5080
332	ISABELLA DAVID	CP04-04D39	557-3501
217	ISEN FORESTER W	CP04-09D37	557-5080
222	ISSING GREGORY C	CP04-10E02	557-2037
154	IVES PATRICIA	CP02-11D22	557-6525
155	IVY WARREN	CP02-10B32	557-6525
236	JABLON CLARK A	CP04-11E14	557-2064
PET	JACKSON CHERYL P.G	CP03-11C11	557-4282
253	JACKSON JEROME JR	CP04-07A03	557-2913
151	JACOBS LEWIS	CP02-10D06	557-6525
152	JACONETTY KENNETH	CP02-11D31	557-6525
245	JAEKEL KATHERINE A	CP04-07E08	557-7619
253	JAMES ANDREW J	CP04-07B02	557-2913
247	JAUDON HENRY S	CP04-06D11	557-3304
335	JAWORSKI FRANCIS	CP04-04E04	557-3501
242	JENKINS ROBERT W	CP04-07D11	557-3451
214	JENNINGS DEREK S	CP04-08B11	557-2767
121	JILES HENRY R	CP02-09D01	557-3920
245	JILLIONS JOHN M	CP04-07E10	557-7619
154	JOHNSON BEVERLY K	CP02-11D10	557-6525
355	JOHNSON BLAIR M	CP03-04B30	557-6200
137	JOHNSON CAROLYN E	CP03-08B11	557-2475
116	JOHNSON LANCE G	CP03-09D27	557-6690
315	JOHNSON RAYMOND B	CP03-05A11	557-3618
331	JOHNSON RICHARD J	CP03-03B08	557-3402
134	JOHNSON WILLIAM R	CP03-09B07	557-2475
311	JONES ANDREW	CP03-05A03	557-3618
321	JONES DAVID B	CP03-06B26	557-3743
323	JONES JAMES L. JR	CP03-07E14	557-6504
345	JONES LARRY	CP04-03B36	557-3467
151	JONES LUCY R	CP02-10A21	557-6525
132	JONES RAYMOND N	CP03-08D01	557-2475
136	JONES WILLIAM G	CP03-08E06	557-2475
221	JORDAN CHARLES T	CP04-10D33	557-2894
325	JORDAN MERVIN	CP03-07D11	557-6523
OED	JORDAN PATRICIA M	CP03-10D25	557-1729
344	JOYCE HAROLD	CP04-03D07	557-0900
222	KAISER KENNETH R	CP04-10B12	557-2478
114	KALAFUT STEPHEN J	CP03-10E08	557-6725
345	KAMEN NOAH	CP04-03E04	557-3471
335	KAMM WILLIAM	CP04-04B40	557-3144
216	KAMPE FREDERICK L	CP04-08C07	557-2776
357	KANNAN PHILIP C	CP03-04B08	557-6200
112	KAPLAN GERALD L	CP03-09B34	557-2517
267	KARLSEN ERNEST F	CP04-05D25	557-3357
336	KARTCHNER GENE	CP04-04B16	557-3137

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ORG	NAME	NEW ROOM #	NEW PHONE
313	KASHNIKOW ANDRES	CP03-05D05	557-3618
111	KASTLER SCOTT R	CP03-10B30	557-3580
321	KATZ STEVEN B	CP03-06B24	557-6048
324	KAZENSKE ROBERT	CP03-06B18	557-6064
217	KEANE PATRICK C	CP04-09C35	557-2903
321	KEARNS JERRY T	CP03-06E10	557-6035
247	KEE CHI JAMES	CP04-06D05	557-3304
133	KELLOGG ARTHUR D	CP03-07B16	557-2475
354	KELLY DONALD G	CP03-03D21	557-6200
237	KEMENY E. S. MATT	CP04-11E08	557-2875
291	KEMPER CATHERINE E	CP04-10A01	557-2911
154	KENDELL LORRAINE	CP02-11D14	557-6525
257	KENT LYNN V	CP04-08E09	557-2884
128	KEPLINGER ESTHER	CP02-08D17	557-3920
213	KEVE ALFRED S	CP04-09C07	557-5050
243	KIDORF RENEE S	CP04-06B30	557-3221
153	KIGHT JOHN	CP02-10A22	557-6525
223	KILBY CATHERINE S	CP04-10B22	557-2037
125	KILCOYNE JOHN M	CP02-08B04	557-3920
233	KILGORE ROBERT M	CP04-11A15	557-2875
126	KILLOS PAUL	CP02-09E04	557-3920
131	KIMLIN EDWARD C	CP03-07A01	557-2475
344	KING LLOYD	CP04-03D21	557-3471
356	KISLIUK BRUCE M	CP03-04D31	557-6200
156	KITTLE JOHN	CP02-11E02	557-6525
221	KLEIN RICHARD L	CP04-10E16	557-2894
337	KLIMA WILLIAM	CP34-03D59	557-3214
322	KLINE THOMAS M	CP03-06E10	557-6034
EEO	KLUGE RHODA K	CP03-10D16	557-1692
242	KNICK MICHAEL J	CP04-07A11	557-2913
324	KNOBLE JOHN	CP03-06B20	557-6052
346	KOCZO MICHAEL	CP04-02B04	557-5680
151	KOECKERT ARTHUR	CP02-10E11	557-6525
235	KONICK BERNARD	CP04-11D01	557-2867
116	KONOPKA PAUL E	CP03-09D21	557-6685
255	KOREN MATTHEW W	CP04-08D25	557-2627
262	KOSTAK VICTOR R	CP04-05B14	557-3321
264	KOVALICK VINCENT P	CP04-05E14	557-3354
215	KOZMA THOMAS J	CP04-09D23	557-5070
331	KRAMER ARNOLD	CP03-03B22	557-2172
234	KRASS ERROL A	CP04-11B18	557-2871
138	KRATZ PETER F	CP03-08B08	557-2475
247	KRAVITZ JUDITH L	CP04-06A11	557-3304
267	KRAWCZEWICZ STANLEY T	CP04-05D05	557-3321
265	KREITMAN STEPHEN A	CP04-05E10	557-3321
317	KRIZEK JANICE L	CP03-05E12	557-3618
352	KRIZMANICH GEORGE	CP03-04B16	557-6200
336	KRUTER JEROME	CP04-04B24	557-3501
215	KUCIA RICHARD R	CP04-09D13	557-5070
155	KULKOSKY PETER	CP02-10B26	557-6525
351	KUNDRAT ANDREW V	CP03-04D05	557-6200

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ORG	NAME	NEW ROOM #	NEW PHONE
260	KUNIN STEPHEN G.	CP04-05D19	557-3320
344	KWON JOHN	CP04-03A03	557-0900
223	KYLE DEBORAH L.	CP04-10B18	557-2037
135	LACY DAVID L.	CP03-08E10	557-2475
342	LALL PARSHOTAM	CP04-02D05	557-5704
253	LAMONT JOHN C.	CP04-07B03	557-2913
118	LANDER FERRIS H.	CP03-09E14	557-2517
113	LANGEL WAYNE A.	CP03-09A11	557-6710
220	LANGER DIANA J.	CP04-10D19	557-2897
291	LARGEN JAMES R.	CP04-10B08	557-2911
253	LARKINS WILLIAM D.	CP04-07B06	557-3311
252	LAROCHE EUGENE R.	CP04-07B18	557-3311
321	LARSON LOWELL A.	CP03-06B34	557-6042
236	LASTOVA JOHN R. III	CP04-11D33	557-2875
213	LATEEF MARVIN M.	CP04-09C03	557-5050
OPP	LAWHORN MARVA G.	CP03-10B04	557-9182
152	LAWRENCE EVAN	CP02-11A10	557-6525
342	LAZARUS IRA	CP04-02D03	557-5697
342	LAZARUS RONALD	CP04-02D03	557-5689
157	LE HOA	CP02-11C02	557-6525
112	LEADER WILLIAM T.	CP03-09B28	557-2517
A/C	LEAVITT ALFRED L.	CP03-10D03	557-8384
223	LECHERT STEPHEN J.	CP04-10B36	557-2037
355	LECHOK SARAH A.	CP03-04B22	557-6200
136	LEDBETTER TITUS B.	CP03-08B36	557-2475
252	LEE BENNY T.	CP04-07B26	557-3311
211	LEE DOUGLAS S.	CP04-09B20	557-2903
237	LEE JAMESON	CP04-11B38	557-2871
251	LEE JOHN D.	CP04-07E04	557-7617
153	LEE LESTER	CP02-10B16	557-6525
113	LEEDS JACKSON	CP03-09A05	557-6717
240	LEEPER DEBORAH P.	CP04-07D19	557-2906
114	LEFEVOUR CHARLES F.	CP03-10E06	557-2517
356	LEPPINK JAMES A.	CP03-04D35	557-6200
154	LESMES GEORGE	CP02-11E16	557-6525
336	LESTER MICHELLE	CP04-04B18	557-3144
213	LEUNG PHILIP H.	CP04-09A11	557-5050
261	LEV ROBERT G.	CP04-05A07	557-3357
230	LEVY EARL	CP04-11D19	557-5088
267	LEVY STEWART J.	CP04-05D11	557-3357
245	LEVY STUART S.	CP04-07E16	557-3451
331	LEWIS BRADLEY	CP03-03B20	557-2172
257	LEWIS DAVID	CP04-08D38	557-2884
111	LEWIS MICHAEL L.	CP03-10B22	557-3578
127	LEWITAN DINAH	CP02-09E13	557-3920
341	LI H. EDWARD	CP04-03B18	557-3464
151	LIEBERMAN ALLAN	CP02-10D08	557-6525
355	LIEBERMAN CHERNEY S.	CP03-04B22	557-6200
251	LIEBERMAN ELI	CP04-08E10	557-2627
157	LIEBERMAN PAUL	CP02-10A10	557-6525
151	LILLING HERBERT	CP02-10D14	557-6525

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ORG	NAME	NEW ROOM #	NEW PHONE
325	LIN KUANG	CP03-07D07	557-6484
133	LINDSAY ROBERT L	CP03-07B18	557-2475
358	LINDSEY RODNEY	CP03-03B09	557-6200
156	LIPMAN BERNARD	CP02-10B30	557-6525
125	LIPOVSKY JOSEPH A	CP02-08B04	557-3920
246	LITTLE WILLIS	CP04-06D29	557-3204
222	LOBO IAN J	CP04-10B12	557-2478
223	LOCKER HOWARD J	CP04-10E02	557-2037
126	LONE WERREN	CP02-09B14	557-3920
343	LOOK EDWARD	CP04-03B10	557-3464
137	LORIN HUBERT C	CP03-08B09	557-2475
156	LOUIE WON HENRY	CP02-11B24	557-6525
123	LOVE ETHEL G	CP02-08D03	557-3920
313	LOVE JOHN J	CP03-05D01	557-3618
223	LOVERING RICHARD D	CP04-10B16	557-2037
137	LOWE JAMES B	CP03-08A09	557-2475
241	LOWRANCE GEORGE E	CP04-06B04	557-2913
A/C	LUCAS JAY P	CP03-10A03	557-8384
291	LUCAS SUSAN J	CP04-10A03	557-2911
358	LUONG VINH	CP03-03B09	557-6200
152	LUSIGNAN MICHAEL	CP02-11D30	557-6525
135	LUTTER FRANK W	CP03-08D35	557-2475
357	LYDDANE WILLIAM E	CP03-04A01	557-6200
130	LYLES RUTH	CP03-08D14	557-2475
267	LYNCH MICHAEL J	CP04-05D03	557-3357
A/C	MAASSEL LOUIS D	CP03-11A03	557-3070
236	MACDONALD ALLEN R	CP04-11E14	557-2064
332	MACEY HARRY	CP04-04D27	557-3131
355	MACHADO REINALDO P	CP03-04B28	557-6200
247	MACKEY ROBERT	CP04-06D07	557-3304
214	MACON ROBERT S	CP04-08B12	557-2767
344	MAKAY ALBERT	CP04-03D01	557-0900
237	MALAMUD RONNI S	CP04-11B36	557-2801
347	MALKIN MARK	CP04-03D37	557-3214
232	MALZAHN DAVID H	CP04-11B12	557-2871
333	MANCENE LOUIS	CP04-04D01	557-3131
352	MANLEY MARK	CP03-04B18	557-6200
133	MANOHARAN VIRGINIA	CP03-07E04	557-2475
221	MAPLES JOHN S	CP04-10D21	557-2894
316	MAR MICHAEL Y	CP03-05B28	557-3618
128	MARANTZ SIDNEY	CP02-08D15	557-3920
313	MARBERT JAMES B	CP03-05D13	557-3618
134	MARCUS MICHAEL S	CP03-09B10	557-2475
243	MARCUS STEPHEN	CP04-06B32	557-3221
334	MARLO GEORGE	CP04-04B06	557-3137
311	MARMOR CHARLES A	CP03-05B04	557-3618
151	MARQUIS MELVYN	CP02-10D04	557-6525
126	MARS HOWARD T	CP02-09B20	557-3920
262	MARTIN JOHN C	CP04-05B16	557-3321
156	MARTIN ROLAND	CP02-11E10	557-6525
246	MARTIN WILLIAM D. JR	CP04-06D21	557-3206

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ORG	NAME	NEW ROOM #	NEW PHONE
127	MARTINELL JAMES	CP02-09D29	557-3920
262	MASINICK MICHAEL A	CP04-05B22	557-3317
341	MASLOUSKY PAUL	CP04-03B26	557-3467
131	MASSIE JEROME W	CP03-07B06	557-2475
246	MATECKI THOMAS P	CP04-06D19	557-3211
211	MATHEWS ALAN A	CP04-09B22	557-2903
250	MATTHEWS SAMUEL S	CP04-08D19	557-2084
116	MAULL HELANE E	CP03-09D33	557-3030
213	MAYEWSKY VOLODYMYR Y	CP04-09D05	557-5070
138	MCBRAYER TINKER R	CP03-08B10	557-2475
357	MCCALL JAMES T	CP03-04B06	557-6200
154	MCCAMISH MARION	CP02-11D02	557-6525
118	MCCARTHY HELEN M	CP03-09E08	557-2517
316	MCCARTHY JOSEPH G	CP03-05B34	557-3618
128	MCCOWIN KATHLEEN S	CP02-08D13	557-3920
337	MCDANIEL JAMES	CP34-03D53	557-3214
262	MCDOWELL ERIN A	CP04-05B18	557-3321
111	MCDOWELL ROBERT L	CP03-10B33	557-6731
235	MCELHENY DONALD E. JR	CP04-11D27	557-2064
116	MCFARLANE ANTHONY R	CP03-09D33	557-3575
316	MCGIEHAN DONN	CP03-05E06	557-3618
346	MCGLEW JOHN	CP04-02B16	557-5688
322	MCGLYNN JOSEPH H	CP03-06D33	557-6031
255	MCGRAW VINCENT P	CP04-08D09	557-2733
138	MCGURK MICHAEL R	CP03-08B10	557-2475
152	MCINTOSH JOHN	CP02-11D28	557-6525
325	MCKEE CHRISTOPHE R	CP03-07D14	557-6488
356	MCKENZIE FRANK	CP03-04D31	557-6200
321	MCLAUGHLIN LINDA	CP03-06B36	557-6041
346	MCNALLY JOHN	CP04-02A01	557-5677
332	MCNEILL GREGORY	CP04-04D31	557-3501
322	MCQUADE JOHN P	CP03-06E14	557-6032
118	MEDLEY MARGARET	CP03-09D32	557-2517
322	MEIER LAWRENCE H	CP03-06D29	557-3730
323	MEISLIN DEBRA S	CP03-07C05	557-3737
324	MEISTER JAMES	CP03-06B04	557-6071
352	MEREK JAMES J	CP03-04B12	557-6200
113	MEROS EDWARD J	CP03-09A03	557-6718
118	METZ ANDREW H	CP03-09E04	557-2517
341	MEYER RICHARD	CP04-03B24	557-3465
125	MEYERS ALBERT T	CP02-08B02	557-3920
247	MEYERS STEVEN	CP04-06A11	557-3304
347	MICHALSKY GERALD	CP04-03D27	557-3471
155	MICHL PAUL	CP02-10E12	557-6525
PET	MICKEY ROGER L	CP03-11B08	557-4282
OPP	MIELCAREK JOHN S	CP03-10B10	557-4214
260	MILES IYONE L	CP04-05D19	557-3320
135	MILES TIM R	CP03-08E14	557-2475
129	MILESTONE NORMA S	CP02-09A13	557-3920
136	MILLARD WANDA L	CP03-08B26	557-2475
342	MILLER CARL	CP04-02A07	557-0352

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ORG	NAME	NEW ROOM #	NEW PHONE
234	MILLER CHARLES D.	CP04-11B24	557-2801
223	MILLER EDWARD A.	CP04-10B26	557-2037
216	MILLER GEORGE H. JR.	CP04-08A07	557-2735
212	MILLER J. D.	CP04-09A01	557-5050
311	MILLER LAWRENCE J.	CP03-05C03	557-3618
254	MILLER STANLEY D.	CP04-07B40	557-7617
332	MILLIN VINCENT	CP04-04E14	557-3501
317	MILLMAN STUART J.	CP03-05D27	557-3618
129	MILLS CATHERINE L.	CP02-09E06	557-3920
237	MILLS JOHN G.	CP04-11E02	557-2065
132	MINNICK MARIANNE S.	CP03-08D21	557-2475
253	MINTEL WILLIAM A.	CP04-07A06	557-2913
252	MIS DAVID C.	CP04-07B28	557-7617
217	MISKA VIT W.	CP04-09D33	557-5080
316	MITCHELL DAVID M.	CP03-05B32	557-3618
EED	MITCHELL ROBIN L.	CP03-10D13	557-1692
OED	MOATZ HARRY I.	CP03-10D29	557-3337
123	MOEZIE FATEMEH T.	CP02-08A03	557-3920
233	MOFFITT JAMES W.	CP04-11D07	557-2867
326	MOON CHARLIE	CP03-07D23	557-6512
313	MOON JAMES R. JR.	CP03-05A13	557-3618
242	MOORE CHRISTOPHER K.	CP04-07D01	557-2913
266	MOORE DAVID K.	CP04-05D01	557-3357
153	MOORE MARVIN.	CP02-10C05	557-6525
358	MOORE RICHARD E.	CP03-03B36	557-6200
214	MOOSE HARRY E. JR.	CP04-08B08	557-2765
110	MORGAN CONNIE	CP03-09D19	557-3035
153	MORGAN KRIELLION.	CP02-10C03	557-6525
152	MORGENSTERN NORMAN.	CP02-11B02	557-6525
157	MORRIS THEODORE	CP02-10A14	557-6525
125	MORRISON JOYCE L.	CP02-08A01	557-3920
215	MOSES RICHARD L.	CP04-09D31	557-5080
223	MOSKOWITZ MARGARET M.	CP04-10B24	557-2037
222	MOSKOWITZ NELSON.	CP04-10D23	557-2897
252	MOTOLLA STEVEN J.	CP04-07B26	557-3311
241	MOY JOSEPH MAN FU	CP04-06A05	557-3304
342	MOY MAGDALEN.	CP04-02B20	557-5700
123	MOYER DONALD B.	CP02-08A15	557-3920
327	MUDD RICHARD.	CP03-06A11	557-6072
121	MULLINS J. G.	CP02-09D21	557-3920
252	MULLINS JAMES B.	CP04-07B14	557-3311
317	MUNCY KEN.	CP03-05E12	557-3618
253	MUNSON GENE M.	CP04-07B08	557-3311
262	MURRAY RICHARD.	CP04-05B10	557-3321
354	MURTAGH JOHN E.	CP03-03D23	557-6200
325	MUSSELMAN PARKE.	CP03-07D10	557-6486
268	MYER DANIEL K.	CP04-05E08	557-3321
261	MYERS RANDALL P.	CP04-05A01	557-3321
342	MYHRE CHARLES.	CP04-02D01	557-5690
265	MYRACLE JERRY W.	CP04-06B36	557-3221
128	NAFF DAVID.	CP02-08D09	557-3920

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ORG	NAME	NEW ROOM #	NEW PHONE
354	NAKAZAWA NAOKO	CP03-03B13	557-6200
313	NASE JEFFREY V	CP03-05D07	557-3618
341	NAUMAN TIMOTHY	CP04-03B24	557-3465
343	NEILS PAUL	CP04-03A01	557-0900
346	NEILS PEGGY	CP04-02B14	557-5686
342	NELLI RAYMOND	CP04-02A09	557-5696
255	NELMS D. C	CP04-08D07	557-2733
230	NELSON KATHERINE	CP04-11C17	557-2878
221	NELSON PETER A	CP04-10D37	557-2894
247	NERBUN PETER	CP04-06A13	557-3304
356	NEUDER WILLIAM P	CP03-04E08	557-6200
152	NEWSOME JOHN	CP02-11A14	557-6525
263	NG JIN F	CP04-05B36	557-3317
112	NGUYEN NAM X	CP03-09B12	557-2517
326	NICHOLS STEVEN	CP03-07D19	557-6519
112	NIEBLING JOHN F	CP03-09B26	557-2517
153	NIELSEN EARL	CP02-10B18	557-6525
232	NIESSEN WILLIAM G	CP04-11B10	557-2871
347	NILSON ROBERT	CP04-03D35	557-3214
215	NIMMO MORRIS H	CP04-09D11	557-5070
311	NOLAND KENNETH W	CP03-05A05	557-3618
265	NOLAND THOMAS P	CP04-06E12	557-3204
241	NORTON DONALD F	CP04-06B12	557-3301
347	NOVAK SHERI	CP04-03D37	557-3214
356	NOVASAD STEPHEN J	CP03-04E14	557-6200
135	NOZICK BERNARD	CP03-08D33	557-2475
223	NUCKER CHRISTINE M	CP04-10B38	557-2037
252	NUSSBAUM MARVIN L	CP04-07B16	557-3311
153	NUTTER NATHAN	CP02-10B08	557-6525
345	O'CONNOR DANIEL	CP04-03B34	557-3467
111	O'KEEFE VERONICA	CP03-10B32	557-3581
267	O'SHEA KEVIN D	CP04-05D27	557-3354
266	O'SHEA SANDRA L	CP04-05A11	557-3357
343	OBEE JANE	CP04-03A03	557-0900
314	OBERLEITNER ROBERT J	CP03-05B22	557-3618
314	OBERLEY ALVIN	CP03-05B24	557-3618
345	ODAR HELEN	CP04-03E04	557-3471
334	OECHSLE ANTON	CP04-04B12	557-3137
254	OHRALIK KARL A	CP04-07C35	557-3451
254	OHRALIK KARL A	CP04-08C33	557-2627
342	OKONSKY DAVID	CP04-02C06	557-0352
345	OKUNO KENICHI	CP04-03E06	557-3471
343	OLDS THEODORE	CP04-03C04	557-3464
263	OLMS DOUGLAS W	CP04-05B40	557-3317
355	OLSON ROBERT A	CP03-04B30	557-6200
323	OLSZEWSKI ROBERT P	CP03-07E08	557-6501
123	ORE DALE R	CP02-08D01	557-3920
317	ORESKY LAWRENCE J	CP03-05D23	557-3618
263	ORSINO JOSEPH A	CP04-05B34	557-3317
346	OSTRAGER ALLEN	CP04-02B10	557-5683
114	OZAKI GEORGE T	CP03-10E12	557-3591

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ORG	NAME	NEW ROOM #	NEW PHONE
223	PADGETT BENJAMIN R.	CP04-10B30	557-2037
152	PAGE THURMAN	CP02-11B12	557-6525
116	PAK CHUNG K.	CP03-09D30	557-6692
116	PAL ASOKKUMAR	CP03-09D31	557-2517
317	PAPERNER LESLIE J.	CP03-05E16	557-3618
262	PARKER MICHAEL D.	CP04-05B13	557-3321
323	PARKER ROSCOE V. JR.	CP03-07D33	557-6507
221	PARR TED L.	CP04-10D31	557-2894
137	PARRISH JOHN A.	CP03-08A11	557-2475
A/C	PARSONS MARION JR.	CP03-10D07	557-8384
252	PASCAL BOB	CP04-07B28	557-7617
213	PASCHALL MARK H.	CP04-09A09	557-5050
356	PATE WILLIAM F. III	CP03-04E12	557-6200
322	PAUMEN GARY F.	CP03-06D25	557-6026
252	PAXMAN WESLEY R.	CP04-07B22	557-3311
337	PEARSON CHARLES	CP34-03D65	557-3214
312	PEDDER DENNIS H.	CP03-04D11	557-3618
316	PEKAR JOHN A.	CP03-05E10	557-3618
336	PELLEGRINO STEPHEN	CP04-04B30	557-3144
214	PELLINEN A. DAVID	CP04-08B24	557-2884
215	PENDEGRASS JOAN H.	CP04-09D07	557-5070
262	PENG JOHN K.	CP04-05B14	557-3321
132	PENLAND RAPHAEL B.	CP03-08D11	557-2475
354	PERHAM ALFRED C.	CP03-03D35	557-6200
211	PERKEY WILLIAM B.	CP04-09B18	557-2903
120	PERRY KATHERYN P.	CP02-09A07	557-3920
151	PERTILLA THEODORE	CP02-10D10	557-6525
123	PESELEV ELLI	CP02-08A12	557-3920
333	PESHOCK ROBERT	CP04-04D03	557-3131
124	PETERS EUGENIA M.	CP02-08E11	557-3920
324	PETERS JIMMY C.	CP03-06B12	557-6067
316	PETERS JOSEPH F. JR.	CP03-05E02	557-3618
245	PETERS LEO J.	CP04-07E14	557-7617
242	PETERSON CHRISTINE A.	CP04-07D21	557-3451
245	PETRAKES JOHN	CP04-07D27	557-3453
243	PETRIK ROBERT M.	CP04-06B34	557-3221
292	PFEFFER TERRY A.	CP04-09D21	557-5070
324	PHAN HEIN	CP03-06B20	557-6053
243	PHILLIPS CHARLES E.	CP04-06B22	557-3221
123	PHILLIPS DELBERT R.	CP02-08.10	557-3920
153	PHYNES LUCILLE	CP02-10B24	557-6525
152	PIANALTO BERNARD	CP02-11A08	557-6525
334	PICARD LEO	CP04-04A01	557-3137
337	PIEPRZ WILLIAM	CP34-03D67	557-3214
334	PINKHAM RICHARD	CP04-04B02	557-3137
322	PIRLOT DAVID	CP03-06D31	557-6029
341	PITKO JOSEPH	CP04-03B18	557-3465
233	PITTS HAROLD	CP04-11D05	557-2867
152	PLANTZ BERNARD	CP02-11B06	557-6525
118	POER JAMES E.	CP03-09E10	557-2517
241	POLLARD STEVEN M.	CP04-06B16	557-3301

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ORG	NAME	NEW ROOM #	NEW PHONE
233	POPEK J.	CP04-11A09	557-2881
341	POWELL EVERETTE	CP04-03B14	557-3466
131	POWELL WILLIAM A.	CP03-07B10	557-2475
215	PRESCOTT ARTHUR C.	CP04-09E02	557-2903
216	PRESTON GERALD E.	CP04-08A09	557-2735
116	PREZLOCK CYNTHIA A.	CP03-09D27	557-6689
345	PRICE CARL	CP04-03B30	557-3467
241	PRICE WILLIAM I.	CP04-06B02	557-3301
257	PROPP WILLIAM W.	CP04-08E16	557-2627
135	PRUNNER KATHLEEN J.	CP03-08E08	557-2475
235	PSITOS ARISTOTELIS M.	CP04-11D11	557-2867
257	PUNTER WILLIAM	CP04-08D29	557-3107
311	PYRYT GEORGE S.	CP03-05A07	557-3618
352	QUIRAY ARTHUR T.	CP03-03E11	557-6200
292	RADEMAKER CHARLES A.	CP04-10B14	557-2478
354	RADUAZO HENRY E.	CP03-03D27	557-6200
355	RAMIREZ RAMON O.	CP03-04B34	557-6200
325	RAMSEY KENNETH	CP03-07D03	557-1898
129	RAMSUER ROBERT W.	CP02-09B04	557-3920
358	RASKOB ANTHONY W.	CP03-03B28	557-6200
310	RASMUSSEN BETTY	CP03-05D19	557-3677
313	RASTELLO JON M.	CP03-05A15	557-3618
129	RAYMOND RICHARD L.	CP02-09D03	557-3920
126	REAMER JAMES H.	CP02-09B26	557-3920
212	REBSCH DONALD L.	CP04-09B08	557-5050
335	RECLA HENRY	CP04-04B38	557-3144
155	REDDICK MARIE	CP02-10E05	557-6525
340	REED MARY	CP04-03D13	557-3128
312	REESE RANDOLPH A.	CP03-04D19	557-3618
312	REEVES ROBERT B.	CP03-04D17	557-3618
314	REGER DUANE A.	CP03-05B12	557-3618
335	REICHLE KARIN	CP04-04C37	557-3144
216	REINHART MARK J.	CP04-08C05	557-2767
357	RENDOS THOMAS A.	CP03-04A07	557-6200
213	REYNOLDS BRUCE	CP04-09D01	557-5070
247	REYNOLDS W. CARTER	CP04-06D09	557-3304
316	RICE KENNETH R.	CP03-05B36	557-3618
235	RICHARDSON ROBERT L.	CP04-11D35	557-2084
134	RICHMAN BARRY S.	CP03-09B02	557-2475
346	RICHTER SHELDON	CP04-02B08	557-5682
354	RIDGILL JAMES L. JR.	CP03-03D33	557-6200
247	RIMRODT LOUIS	CP04-06D13	557-3204
326	RISING VERNON	CP03-07C07	557-3739
347	RIVELL JOHN	CP04-03D39	557-3214
122	RIVERS DIANA G.	CP02-08E04	557-3920
OPP	RIZZO JENNIFER L.	CP03-10B12	557-5141
122	RIZZO NICHOLAS S.	CP02-08E08	557-3920
217	RO BENTSU	CP04-09E06	557-5080
242	ROBERTS EDWARD L. JR.	CP04-07D05	557-2913
125	ROBERTS ELBERT L.	CP02-08B20	557-3920
125	ROBINSON ALLEN J.	CP02-08B16	557-3920

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ORG	NAME	NEW ROOM #	NEW PHONE
125	ROBINSON DOUGLAS W	CP02-08B18	557-3920
154	ROBINSON ELLIS	CP02-11D16	557-6525
263	ROKOFF KENNETH I	CP04-05B30	557-3317
311	ROLLA JOSEPH J. JR	CP03-05A01	557-3618
129	ROLLINS ALTON D	CP02-08E12	557-3920
125	ROLLINS JOHN W	CP02-08B12	557-3920
352	ROLNICKI JOSEPH M	CP03-03E08	557-6200
114	ROONEY GERARD P	CP03-10B31	557-2517
336	ROONEY MARK	CP04-04B13	557-3144
323	ROSE ROBERT A	CP03-07E09	557-6517
123	ROSE SHEP K	CP02-08A05	557-3920
128	ROSEN SAM	CP02-08D11	557-3920
336	ROSENBAUM C	CP04-04B22	557-3144
326	ROSENBAUM MARK	CP03-07D31	557-6508
321	ROSENBERG CHARLES	CP03-06B36	557-6040
111	ROSENBERG PETER D	CP03-10B24	557-3602
255	ROSENBERGER RICHARD A	CP04-08D05	557-2733
347	ROSENTHAL ARNOLD	CP04-03D33	557-3471
265	ROSKOS JOSEPH W	CP04-06E10	557-3204
217	ROSKOSKI BERNARD	CP04-09E14	557-5080
327	ROSS TAYLOR J	CP03-06A13	557-6074
121	ROTMAN ALAN L	CP02-09D07	557-3920
OPP	ROUCK RICHARD H	CP03-10B02	557-4222
325	ROWAN KURT	CP03-07D13	557-6521
268	ROWLAND JAMES L	CP04-06E14	557-3204
114	ROY UPENDRA	CP03-10E16	557-3594
261	RUBINSON GENE Z	CP04-05B02	557-3321
354	RUDY ANDREW	CP03-03B15	557-6200
268	RUEHL CHARLES A	CP04-06D37	557-2921
236	RUGGIERO JOSEPH F	CP04-11D29	557-2876
113	RUSSEL JEFFREY E	CP03-09A13	557-3582
211	RUTLEDGE DELLA J	CP04-09C33	557-2903
111	RUTLEDGE DEWAYNE L	CP03-10E02	557-6722
114	SABA WILLIAM G	CP03-10D33	557-6729
134	SADOWSKI DAVID R	CP03-08B18	557-2475
354	SAFAVI MICHAEL	CP03-03D25	557-6200
263	SAFOUREK BENEDICT V	CP04-05E04	557-3321
357	SAKRAN VICTOR N	CP03-04B10	557-6200
214	SALCE PATRICK R	CP04-08B06	557-2765
336	SAMARAS MHARRIE	CP04-04B16	557-3137
250	SANCHEZ M. E. MRS	CP04-08D19	557-2084
155	SAROFIM NABIL	CP02-10B28	557-6525
351	SCANLAN RICHARD J. JR	CP03-04D07	557-6200
246	SCANLON PATRICK	CP04-06D17	557-3204
314	SCHACHER RICHARD A	CP03-05B10	557-3618
323	SCHAD STEVEN P	CP03-07D10	557-6486
221	SCHAFER RICHARD E	CP04-10D27	557-2894
153	SCHAIN HOWARD	CP02-10B12	557-6525
237	SCHATOFF OLEG	CP04-11C35	557-2875
125	SCHENKMAN LEONARD	CP02-08B14	557-3920
312	SCHERBEL DAVID A	CP03-04D09	557-3618

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ORG	NAME	NEW ROOM #	NEW PHONE
114	SCHIAVELLI ALAN E	CP03-10E14	557-3593
156	SCHILLING RICHARD	CP02-11B22	557-6525
323	SCHMIDT FREDERICK	CP03-07D35	557-6506
334	SCHNEIDER MATTHEW	CP04-04B11	557-3137
155	SCHOFFER JOSEPH	CP02-10E02	557-6525
133	SCHOR KENNETH M	CP03-07B30	557-2475
324	SCHRAN DONALD	CP03-06B06	557-6070
261	SCHREYER STAFFORD D	CP04-05B06	557-3321
261	SCHROEDER LARRY C	CP04-05A03	557-3321
247	SCHROEDER WERNER	CP04-06D01	557-3304
355	SCHULTZ WILLIAM H	CP03-04B20	557-6200
333	SCHULZE KRIS	CP04-04C05	557-3131
246	SCHUSTER DAVID R	CP04-07E12	557-7617
347	SCHWADRON MARTIN	CP04-03D41	557-3214
344	SCHWARTZ LARRY	CP04-03D11	557-3471
154	SCHWARTZ PAMELA	CP02-11D07	557-6525
121	SCHWARTZ RICHARD A	CP02-09D09	557-3920
150	SCOTT ELLEN	CP02-11B14	557-6525
214	SCOTT JAMES R	CP04-08B14	557-2767
251	SCOTT LEON JR	CP04-08E08	557-2627
126	SCOTT PATRICIA M	CP02-09B28	557-3920
345	SCOTT SAMUEL	CP04-03E02	557-3467
OPP	SCOTT SUSIE S	CP03-10B12	557-4219
263	SCUTCH FRANK M	CP04-05B30	557-3317
213	SEARS CHISTOPHER N	CP04-09D07	557-5070
223	SEBASTIAN LELAND A	CP04-10B32	557-2037
151	SECCURO CARMAN	CP02-10D12	557-6525
325	SEIDEL RICHARD	CP03-07C03	557-3733
156	SEIDLECK JAMES	CP02-11E09	557-6525
151	SELLERS ROBERT	CP02-10E09	557-6525
133	SEVER FRANK	CP03-07B20	557-2475
233	SEVERIN DAVID J	CP04-11C05	557-2881
OPP	SEWARD MARGARET C	CP03-10B09	557-5149
337	SEWELL PAUL	CP03-03D09	557-3414
156	SHAH MUKUND	CP02-11B20	557-6525
317	SHANE KYLE E	CP03-04D27	557-3618
127	SHAPIRO LIONEL M	CP02-09E16	557-3920
334	SHAPIRO PAUL	CP04-04B04	557-3137
311	SHAVER KEVIN P	CP03-05A09	557-3618
124	SHAVER PAUL F	CP02-08E10	557-3920
213	SHAW CLIFFORD C	CP04-09A13	557-5080
232	SHAW DALE M	CP04-11C33	557-2881
237	SHAW GARETH D	CP04-11B40	557-2065
331	SHAY C	CP03-03B04	557-3401
347	SHAY JAMES	CP34-03D49	557-3214
336	SHEDD CHARLES	CP04-04B20	557-3144
111	SHEEHAN JOHN P	CP03-10B16	557-5143
335	SHEIN MITCHELL	CP04-04E08	557-3501
122	SHEN CECILIA J	CP02-08E02	557-3920
243	SHEPPERD JOHN W	CP04-06B26	557-3221
317	SHERIDAN ROBERT G	CP03-05D31	557-3618

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ORG	NAME	NEW ROOM #	NEW PHONE
116	SHINE WILLIAM J.	CP03-09D13	557-2621
126	SHIPPEN MICHAEL L.	CP02-09E02	557-3920
241	SHOAP ALLAN N.	CP04-06B10	557-3301
292	SHOOMAN THEODORE M.	CP04-11C25	557-2863
212	SHOOP WILLIAM M. JR.	CP04-09A03	557-5050
151	SHORT PATRICIA	CP02-10E16	557-6525
124	SHUBIN HARRY B.	CP02-08E09	557-3920
123	SIEGEL ALAN M.	CP02-08A11	557-3920
317	SIEMENS TERRANCE L.	CP03-05D21	557-3618
213	SIGDA CATHERINE	CP04-09C05	557-5070
251	SIKES WILLIAM L.	CP04-08E04	557-2776
137	SILBAUGH JAN H.	CP03-08A05	557-2475
324	SILVERBERG FRED	CP03-06B10	557-6068
152	SILVERBERG SAM	CP02-11A16	557-6525
154	SILVERMAN STANLEY	CP02-11D08	557-6525
343	SIMENAUER JEFF	CP04-03A01	557-0900
131	SIMMONS DAVID A.	CP03-07B08	557-2475
242	SIMONE TIMOTHY F.	CP04-07D13	557-3451
350	SINCLAIR CAROL	CP03-03D19	557-3414
327	SIPOS JOHN	CP03-06D05	557-6493
311	SKAGGS H. GRANT JR.	CP03-05B02	557-3618
114	SKAPARS ANTHONY	CP03-10D31	557-3592
111	SKIFF PETER K.	CP03-10B28	557-6719
334	SKOGGUIST HARLAND	CP04-04B14	557-3137
212	SKUDY ROBERT	CP04-09B16	557-5050
234	SLOYAN THOMAS J.	CP04-11B26	557-2802
253	SMALL CHARLES S.	CP04-07B04	557-2913
350	SMITH AL LAURENCE	CP03-03D17	557-3414
256	SMITH ALFRED	CP04-08B40	557-2776
354	SMITH CREIGHTON	CP03-03B11	557-6200
217	SMITH DAVID	CP04-09E10	557-5080
155	SMITH EDWARD	CP02-10E06	557-6525
358	SMITH GARY L.	CP03-03E02	557-6200
323	SMITH JAMES G.	CP03-07E10	557-6502
236	SMITH JERRY	CP04-11E10	557-2875
152	SMITH JOHN	CP02-11A06	557-6525
343	SMITH LEONARD	CP04-03A05	557-0900
346	SMITH RANDOLPH	CP04-02B14	557-5685
246	SMITH ROBERT I.	CP04-06D27	557-3204
133	SMITH WILLIAM F.	CP03-07B32	557-2475
118	SMITH-HARRIS MRS. Y.	CP03-09E16	557-2517
124	SNEED HELEN M. S.	CP02-08E16	557-3920
267	SNOW WALTER E.	CP04-05D23	557-3357
267	SOLIS JOSE M.	CP04-05D07	557-3357
344	SOLLECITO JOHN	CP04-03C03	557-0900
312	SONG ROBERT R.	CP03-04D23	557-3618
315	SOTELO JESUS D.	CP03-06A05	557-3618
222	SOTOMAYOR JOHN B.	CP04-10E08	557-2897
292	SPANGLER ROBERT C.	CP04-10A13	557-2863
317	SPAR ROBERT J.	CP03-05D35	557-3618
134	SPEAR FRANK A.	CP03-08B16	557-2475

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ORG	NAME	NEW ROOM #	NEW PHONE
135	SPITZER ROBERT H.	CP03-08E12	557-2475
232	SPRINGBORN HARVEY E.	CP04-11A03	557-2881
129	SPRINGER DAVID B.	CP02-09B06	557-3920
327	SPRUILL ROBERT.	CP03-06D01	557-6491
352	STAAB LAWRENCE.	CP03-03E14	557-6200
111	STALLARD WAYLAND W.	CP03-10B34	557-8720
356	STARINSKY MICHAEL J.	CP03-04E06	557-6200
347	STARSIAK JOHN.	CP04-03E12	557-3214
246	STEARNS RICHARD R.	CP04-06D25	557-3204
235	STEFANSKI PAUL A.	CP04-11D10	557-2867
222	STEINBERGER BRIAN S.	CP04-10E08	557-2897
152	STEINBERGER ROBERT.	CP02-11D31	557-6525
235	STELLAR GEORGE G.	CP04-11D23	557-2875
246	STEPHEN STEVEN L.	CP04-06D19	557-3211
257	STERN RONALD.	CP04-08E14	557-3107
212	STERRETT JEFFREY L.	CP04-09B04	557-5080
310	STEVENS MARGARET W.	CP03-05B14	557-3618
214	STEWARD SUSAN A.	CP04-08B26	557-2884
PET	STEWART DAVID L.	CP03-11B04	557-4282
242	STINSON FRANKIE L.	CP04-07A13	557-2913
340	STOCKING DONLEY.	CP04-03D17	557-3340
245	STODOLA DANIEL P.	CP04-07E12	557-7617
351	STODOLA NANCY J.	CP03-04A09	557-6200
334	STOLL MARYANN.	CP04-04B11	557-3137
113	STOLL ROBERT L.	CP03-09D05	557-2517
333	STONE CARY.	CP04-04C07	557-3137
123	STONE JACQUELINE M.	CP02-08A07	557-3920
314	STONER BRUCE H. JR.	CP03-05B18	557-3618
312	STORMER RUSSELL D.	CP03-04D25	557-3618
331	STOUFFER RICHARD.	CP03-03B10	557-3401
343	STOUT DONALD.	CP04-03B12	557-3464
113	STRAUB GARY P.	CP03-09A07	557-2517
267	STRECKER GERARD R.	CP04-05D09	557-3357
327	STUDEBAKER DONALD.	CP03-06A11	557-6073
356	SUCHFIELD GEORGE A.	CP03-04E16	557-6200
257	SUGARMAN SCOTT J.	CP04-08D35	557-3107
124	SUTTO ANTON H.	CP02-08D27	557-3920
268	SWANN GLEN R.	CP04-05E06	557-3354
333	SWIATEK ROBERT.	CP04-04D09	557-3131
315	SWINEHART EDWIN L.	CP03-06C03	557-3618
154	SWISHER NANCY.	CP02-11D09	557-6525
265	SWISHER S. CLEMENT.	CP04-06B40	557-3221
335	SYKES ANGELA.	CP04-04E06	557-3501
234	TAGER CLIFFORD L.	CP04-11B20	557-2801
110	TALBERT DENNIS E. JR.	CP03-09D17	557-3035
356	TALBOTT DAVID L.	CP03-04B11	557-6200
127	TANENHOLTZ ALVIN E.	CP02-09E14	557-3920
344	TANNER HARRY.	CP04-03D05	557-0900
344	TAPOLCAI WILLIAM.	CP04-03D09	557-3471
127	TARCZA JOHN E.	CP02-09D23	557-3920
216	TARCZA T. H.	CP04-08A01	557-2735

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ORG	NAME	NEW ROOM #	NEW PHONE
333	TARNOFF DAVID	CP04-04D25	557-3131
245	TAYLOR BILLY S	CP04-07D37	557-3451
351	TAYLOR DENNIS L	CP03-04A15	557-6200
122	TEOLI WILLIAM	CP02-08E02	557-3920
321	TERRELL WILLIAM E	CP03-06B30	557-6045
234	TESKA KEVIN J	CP04-11B30	557-2801
155	TESKIN FRED	CP02-10E03	557-6525
127	TESKIN ROBIN L	CP02-09D27	557-3920
336	THALER MICHAEL	CP04-04B26	557-3144
114	THANE NATHAN S	CP03-10B31	557-3604
136	THERKORN ERNEST G	CP03-08B28	557-2475
A/C	THESZ J. MICHAEL	CP03-10D09	557-8384
223	THEXTON MATTHEW A	CP04-10B22	557-2897
154	THIBODEAU PAUL	CP02-11D06	557-6525
123	THIEMAN CHARLES H	CP02-08A12	557-3920
156	THOMAS ALEXANDER	CP02-11B26	557-6525
113	THOMAS EARL C	CP03-09D03	557-3585
232	THOMAS JAMES D	CP04-11B02	557-2881
150	THOMAS JAMES O	CP02-11A02	557-6525
320	THOMAS VERA	CP03-06C17	557-3694
214	THOMPSON GREGORY D	CP04-08B09	557-2765
157	THOMPSON WILLIE	CP02-11B16	557-6525
343	THORPE TIMOTHY	CP04-03B12	557-3464
243	THRONSON MARK J	CP04-06B30	557-3221
137	THURLOW JEFFREY R	CP03-08A03	557-2475
292	TITOLO LINDA M	CP04-09D21	557-5070
267	TOKAR MICHAEL J	CP04-05D13	557-3357
214	TOLIN GERALD P	CP04-08B16	557-2767
311	TOLLBERG STANLEY H	CP03-05B06	557-3618
215	TONE DAVID A	CP04-09D09	557-5070
123	TORRENCE DOLPH H	CP02-08A13	557-3920
233	TRAFTON DAVID L	CP04-11A07	557-2881
358	TRETTEL MICHAEL F	CP03-03B33	557-6200
126	TROUSOF NATALIE	CP02-09B32	557-3920
247	TROUTMAN DORIS	CP04-06A15	557-3304
217	TRUHE JOSEPH	CP04-09E16	557-5080
336	TRULUCK DALTON	CP04-04B32	557-3144
222	TUBBESING THEODORE H	CP04-10E14	557-2897
221	TUDOR HAROLD J	CP04-10D29	557-2894
112	TUFARIELLO THOMAS M	CP03-09B22	557-2517
268	TUMM BRIAN R	CP04-06E16	557-2921
112	TUNG TA-HSUNG	CP03-09B30	557-2517
157	TUNGOL MARIA	CP02-10B04	557-6525
233	TUPPER ROBERT S	CP04-11D03	557-2867
134	TURK ARNOLD	CP03-09B08	557-2475
A/C	TURNER VINCENT D	CP03-10D01	557-8384
129	TURNIPSEED JAMES H	CP02-09B10	557-3920
251	ULLAH AKM E	CP04-07E09	557-3451
317	UNDERWOOD DONALD W	CP03-05D29	557-3618
236	UNGERMAN MARK E	CP04-11E14	557-2064
112	VALENTINE DONALD R	CP03-09B14	557-2517

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ORG	NAME	NEW ROOM #	NEW PHONE
317	VALENZA JOSEPH E	CP03-04D29	557-3618
292	VALES CARMEN H	CP04-10A09	557-2863
154	VAN BALEN WILLIAM	CP02-11D04	557-6525
120	VAN HORN CHARLES E	CP02-09A09	557-3637
336	VINYARD SHERRIE	CP04-04B18	557-3144
321	VLACHOS LEONIDAS	CP03-06E08	557-6036
243	VOORHEES DAVID H	CP04-06B34	557-3221
317	VOORHEES DOUGLAS	CP03-04D34	557-3618
343	VRABLIK JOHN	CP04-03B06	557-3464
312	WACYRA EDWARD M	CP03-04D21	557-3618
125	WADDELL FREDERICK E	CP02-08B10	557-3920
217	WADE SHELLY M	CP04-09C37	557-5080
213	WALBERG TERESA J	CP04-09A15	557-5070
155	WALKER ALEXANDER	CP02-10E03	557-6525
110	WALKER ANNA	CP03-09C17	557-3598
EEO	WALKER DENISE A	CP03-10D13	557-1692
346	WALKER EDWARD	CP04-02B16	557-5687
326	WALLACE RONALD	CP03-07D12	557-6487
223	WALLEN THOMAS J	CP04-10B28	557-2037
221	WALSH DONALD P	CP04-10D39	557-2894
114	WALTON DONALD L	CP03-10E04	557-6723
347	WALTON GEORGE	CP34-03D47	557-3214
124	WALTZ THOMAS A	CP02-08D25	557-3920
252	WAN GENE	CP04-07B24	557-3311
246	WARD ROBERT S. JR	CP04-06D33	557-3204
128	WARDEN ROBERT	CP02-08D19	557-3920
344	WARNER STEVEN	CP04-03C07	557-0900
124	WARREN CHARLES F	CP02-08D31	557-3920
215	WARREN DAVID S	CP04-09C36	557-2903
220	WASHINGTON LOLA E	CP04-10C23	557-2478
221	WASIL DANIEL D	CP04-10D31	557-2894
263	WATKINS ALBERT W	CP04-05B28	557-3317
245	WATKINS DONALD E	CP04-07D29	557-3453
232	WATSON MARK P	CP04-11B08	557-2871
323	WATSON ROBERT C	CP03-07E12	557-6503
324	WATTS DOUGLAS	CP03-06B14	557-6066
157	WAX ROBERT	CP02-10C01	557-6525
344	WAYNER WILLIAM	CP04-03A09	557-0900
347	WEAKLEY HAROLD	CP04-03D25	557-3471
316	WEAVER ROSS A	CP03-05E04	557-3618
241	WEAVER SUE A	CP04-06A03	557-3304
322	WEBB GLENN L	CP03-06D29	557-6028
322	WEIDENFELD GIL	CP03-06D35	557-3698
327	WEIHROUCH STEVEN	CP03-06A15	557-6490
325	WEIKERT MAUREEN	CP03-07D14	557-6488
132	WEINSTEIN STEVEN L	CP03-08D09	557-2475
333	WEISS JOHN	CP04-04D21	557-3131
114	WEISSTUCH AARON	CP03-10B26	557-3603
217	WELDEN ULYSSES	CP04-09D35	557-5080
313	WELDON KEVIN P	CP03-05A13	557-3618
156	WELSH JOHN	CP02-11E06	557-6525

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ORG	NAME	NEW ROOM #	NEW PHONE
153	WELSH MAURICE	CP02-10B20	557-6525
221	WENDTLAND RICHARD W.	CP04-10E16	557-2894
337	WERESH JOHN	CP34-03D55	557-3214
245	WERNER DAVID	CP04-07D33	557-3451
317	WERNER FRANK E	CP03-05D25	557-3618
255	WESTIN EDWARD P	CP04-08D03	557-2733
138	WESTON CALEB	CP03-07B14	557-2475
344	WESTPHAL DAVID	CP04-03C05	557-0900
358	WHITCOMB ADRIAN	CP03-03B30	557-6200
130	WHITE ROBERT F	CP03-08D19	557-2475
323	WHITEHEAD HAROLD D	CP03-07E16	557-6505
121	WHITTENBAUGH ROBERT	CP02-09D19	557-3920
337	WIECKING DAVID	CP34-03D57	557-3214
266	WIEDER KENNETH A	CP04-05A15	557-3357
237	WIENS TIM A	CP04-11E06	557-2875
222	WILBUR MAYNARD R	CP04-10E04	557-2897
291	WILDER LYNN D	CP04-10B02	557-2875
242	WILHITE BILLY J	CP04-07D09	557-3452
320	WILLEY ANNE A	CP03-06D19	557-3547
232	WILLIAMS ARCHIE E. JR	CP04-11A05	557-2881
265	WILLIAMS HEZRON E	CP04-06E16	557-2921
112	WILLIAMS HOWARD S	CP03-09B32	557-2517
313	WILLIAMS LARRY E	CP03-05D09	557-3618
112	WILLIAMS THEODORE L	CP03-09B12	557-3601
317	WILLIAMSON DENNIS J	CP03-05E14	557-3618
255	WILLIS DAVIS L	CP04-08A15	557-2735
157	WILLIS PRINCE	CP02-10A16	557-6525
333	WILSON JOHN	CP04-04D23	557-3131
358	WILSON NEILL R	CP03-03B32	557-6200
251	WIMER MICHAEL C	CP04-08E03	557-2776
211	WINTERCORN RICHARD A	CP04-09B38	557-2903
234	WISE EDWARD J	CP04-11B22	557-2801
251	WISE ROBERT E	CP04-08E12	557-2627
127	WISEMAN THOMAS	CP02-09D31	557-3920
217	WITKOWSKI STANLEY J	CP04-09E08	557-5080
131	WITYSHYN MICHAEL G	CP03-07B04	557-2475
253	WOJCIECHOWICZ EDWARD J	CP04-07A07	557-2913
352	WOJCIECHOWSKI BRUCE F	CP03-03E06	557-6200
324	WOLFE JAMES	CP03-06B22	557-6050
358	WOLFE ROBERT L	CP03-03B24	557-6200
342	WOLFE WILLIS	CP04-02B18	557-5699
233	WOLFF JOHN H	CP04-11A11	557-2875
155	WONG HARRY	CP02-10E10	557-6525
212	WONG PETER	CP04-09B02	557-5050
138	WOO JAY H	CP03-08B12	557-2475
138	WOODARD JOYE L	CP03-08B14	557-2475
268	WOODIEL DONALD D	CP04-06D35	557-3204
292	WORD GEORGE P	CP04-10A11	557-2863
291	WORD HUGO A	CP04-10B10	557-2911
246	WORTH W. MORRIS	CP04-07A13	557-2913
352	WRIGHT DIRK	CP03-03E10	557-6200

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ORG	NAME	NEW ROOM #	NEW PHONE
337	WRIGHT ERNEST	CP03-03D07	557-3401
116	WRIGHT WILLIAM G	CP03-09D23	557-6686
136	WYSE THOMAS G	CP03-08B32	557-2475
157	YARBORGH AMELIA	CP02-11B18	557-6525
246	YASICH DANIEL M	CP04-06D31	557-3204
336	YASKO JOHN	CP04-04B28	557-3144
111	YEE DEBORAH	CP03-10C34	557-6730
132	YEUNG GEORGE C	CP03-08D27	557-2475
345	YEUNG JAMES	CP04-03B38	557-3467
132	YONCOSKIE ROBERT A	CP03-08D29	557-2475
324	YOST FRANK	CP03-06B08	557-6069
315	YOUNG PATRICK	CP03-06C05	557-3618
331	YU MICKEY	CP03-03B14	557-3401
344	YUEN HENRY	CP04-03D23	557-3471
264	YUSKO DONALD J	CP04-05D39	557-3354
232	ZACHE RAULFE B	CP04-11B04	557-2871
320	ZAHARNA SAMIH N	CP03-06D19	557-3547
292	ZARFAS LOUIS S	CP04-10A15	557-2863
323	ZATARGA JOSEPH T	CP03-07E06	557-6500
254	ZAZWORSKY JOHN	CP04-07B36	557-7617
151	ZIEGLER JACOB	CP02-10D16	557-6525
111	ZIMMERMAN JOHN J	CP03-10B30	557-3580
357	ZUGEL FRANCIS K	CP03-04B02	557-6200

CLASS SEQUENCE

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS AS OF 05/25/84 PAGE 1

CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
002 /				
	ALL		247	04-06D14
003 /				
	ALL		332	04-04D38
004 /				
	ALL		243	04-06C18
005 /				
	ALL		358	03-03C06
006 /				
	ALL		333	04-04D38
007 /				
	ALL		323	03-07C34
008 /				
	94.1	142	157	02-10C15
	147	159	242	04-07D14
	160	161	125	02-08D18
	181	404	157	02-10C15
	405	435	125	02-08D18
	436	939	157	02-10C15
	DIG 1	DIG21	157	02-10C15
010 /				
	ALL		321	03-07C17
012 /				
	ALL		247	04-06C17
014 /				
	ALL		356	03-04C30
015 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 2
AS OF 05/25/84

CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	ALL		242	04-07D14
016 /	ALL		324	03-07C30
017 /	ALL		327	03-06C12
019 /	ALL		247	04-06D14
023 /	ALL		134	03-09C04
024 /	ALL		357	03-03C06
026 /	ALL		247	04-06D14
027 /	ALL		331	04-04B33
028 /	ALL		247	04-06D14
029 /	1 A	25	326	03-07C23
	25.35	25.42	326	03-07C23
	426.1	559	326	03-07C23
	560	568	322	03-07C23
	569 L	591	114	03-10C24
	592 E	631	326	03-07C23
	650		322	03-07C23
	700	885	326	03-07C23
	DIG 1	DIG49	326	03-07C23
	DIG105		326	03-07C23

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 3
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CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	DIG50	DIG104	326	03-07C23
030 /	ALL		324	03-06D04
033 /	ALL		246	04-06C23
034 /	ALL		344	04-03C33
036 /	ALL		247	04-06C17
037 /	1	79	337	34-03D53
	80 A	195	337	34-03D59
	196	285	337	34-03D53
038 /	ALL		247	04-06D14
040 /	ALL		333	04-04D10
042 /	ALL		221	04-10C35
043 /	ALL		325	03-07C23
044 /	1 A	6	116	03-09E11
	7.1	7.6	223	04-10C16
	10 A	48	116	03-09E11
	50	79	118	03-09E11

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 4
AS OF 05/25/84

CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	DIG 1	DIG 4	118	03-09E11
046 /				
	ALL		331	03-03A05
047 /				
	ALL		331	03-03A03
048 /				
	ALL		138	03-08D06
049 /				
	ALL		357	03-04C10
051 /				
	1	292	323	03-07C30
	293	309	157	02-10C15
	310	439	323	03-07C30
	DIG 1	DIG18	323	03-07C30
	DIG19	DIG30	157	02-10C15
	DIG31	DIG34	323	03-07C30
052 /				
	ALL		354	34-03D68
053 /				
	ALL		327	03-06D10
054 /				
	ALL		333	04-04D38
055 /				
	ALL		135	03-07C14
056 /				
	ALL		333	04-04D10
057 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 5
AS OF 05/25/84

CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	ALL		245	04-07D36
059 /				
	1	12	321	03-07D16
	13	901	321	03-06C12
060 /				
	39.01	39.59	343	04-03C10
	39.6	39.63	346	04-03C18
	39.64		343	04-03C10
	39.75	39.83	343	04-03C10
	200	204	343	04-03C10
	205	220	223	04-10C36
	221	271	343	04-03C10
	272	324	346	04-02C08
	325	494	341	04-03D08
	495	515	346	04-02C08
	516	531	346	04-02C08
	532	594	341	04-03D08
	595	631	346	04-02C08
	632	638	342	04-02C08
	639	721	346	04-02C08
	722	902	343	04-03C10
	903	917	343	04-03D08
062 /				
	1	3	344	04-03C33
	4		133	03-07C14
	5	7	344	04-03C33
	8	44	133	03-07C14
	45	531	344	04-03C33
	532	545	133	03-07C14
	DIG 1	DIG23	344	04-03C33
063 /				
	ALL		331	03-03A05
065 /				
	ALL		133	03-07C06
066 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 6
AS OF 05/25/84

CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	ALL		247	04-06D14
068 /				
	ALL		242	04-07D14
069 /				
	ALL		247	04-06C17
070 /				
	ALL		358	34-03D68
071 /				
	1		118	03-09E11
	3	4	129	02-09C10
	5	64.13	118	03-09E11
	65	128	129	02-09C10
	900	904	118	03-09E11
	DIG 1	DIG 4	118	03-09E11
072 /				
	1	342	321	03-06C10
	343	483	321	03-06C12
	700	711	321	03-06C12
073 /				
	1 DC	10	265	04-06E13
	11	14	268	04-06E13
	19	64.4	265	04-06E13
	65		268	04-06E13
	66		265	04-06E13
	73	77	246	04-06D34
	78	132	265	04-06E13
	146	147	268	04-06E13
	148	149	265	04-06E13
	150 A	150 R	246	04-06D34
	151	157	265	04-06E13
	158	169	246	04-06D34
	170 A	171	260	04-07C08
	172		246	04-06D34
	178 H	187	268	04-06E13

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 7
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CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	188	189	265	04-06E13
	195	281	268	04-06E13
	290 B	334	246	04-06D34
	335	338.6	265	04-06E13
	379	381	268	04-06E13
	382	383	265	04-06E13
	384	387	268	04-06E13
	426	429	246	04-06D34
	430	672	265	04-06E13
	700	756	268	04-06E13
	760	860	265	04-06E13
	861	862.69	268	04-06E13
	863	864.91	265	04-06E13
	900	901	265	04-06E13
	DIG 1	DIG11	265	04-06E13
074 /				
	1 SS	500	352	34-03D70
	501 M	617	358	34-03D70
	625	812	352	34-03D70
	813 C	827	358	34-03D70
	828	879	352	34-03D70
	DIG 1	DIG12	352	34-03D70
075 /				
	.5AA	.5R	111	03-10C24
	1 R	2	113	03-10C24
	3	5	111	03-10C24
	6	9	113	03-10C24
	10 A	83	111	03-10C24
	84	84.5	223	04-10C36
	85	96	111	03-10C24
	97 A	121	113	03-10C24
	122.1		111	03-10C24
	122.5	122.7	223	04-10C36
	123 AA	133.5	111	03-10C24
	228	250	223	04-10C36
	251	951	111	03-10C24
	DIG 1		223	04-10C36
076 /				
	ALL		323	03-07C30
079 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 8
AS OF 05/25/84

CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	ALL		326	03-07C17
081 /				
	ALL		323	03-07C30
082 /				
	ALL		321	03-07D30
083 /				
	ALL		324	03-06B15
084 /				
	1		211	04-10C06
	1.01	1.28	217	04-09D32
	2	521	211	04-10C06
	DIG 1	DIG30	217	04-09D32
086 /				
	ALL		223	04-10C35
087 /				
	ALL		245	04-07D36
089 /				
	ALL		221	04-10C35
091 /				
	1	471	341	04-03D08
	472	507	343	04-03D08
	508	536	341	04-03D08
	DIG 1	DIG 4	341	04-03D08
092 /				
	ALL		341	04-03C10
098 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 9
AS OF 05/25/84

CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	ALL		344	04-03C33
099 /				
	ALL		242	04-07D14
100 /				
	ALL		242	04-07D14
101 /				
	ALL		337	34-03D48
102 /				
	ALL		221	04-10C35
104 /				
	ALL		312	03-04E09
105 /				
	ALL		312	03-04C23
106 /				
	1.05	38.9	157	02-11D--
	74	108	118	03-09C32
	109	116	113	03-09C32
	117	121	118	03-09C32
	122	311	157	02-11D--
	312	315	118	03-09C32
	316	901	157	02-11D--
	DIG 1	DIG 6	118	03-09C32
	DIG 7		157	02-11D--
	DIG 8		118	03-09C32
108 /				
	ALL		357	03-04C24
109 /				
	ALL		358	34-03D68
110 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 10
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CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	ALL		344	04-03C33
111 /				
	ALL		331	03-03A03
112 /				
	ALL		247	04-06D14
114 /				
	1	19	315	03-06C04
	20 A	25	221	04-10C35
	26	381	315	03-06C04
116 /				
	1	113	246	04-06C23
	137 A	175	246	04-06C23
	200	242	246	04-06C23
	243	337	246	04-06C23
	DIG 1	DIG47	246	04-06C23
118 /				
	ALL		152	02-11D--
119 /				
	ALL		333	04-04D10
122 /				
	1 A	359	344	04-03C38
	360	512	344	04-03C33
	DIG 1	DIG16	344	04-03C38
123 /				
	1 A	3	342	04-02C08
	18 A	18 R	346	04-02C08
	19	42	342	04-02C08
	43 AA	45 R	346	04-02C08
	46 SC	89	342	04-02C08
	90.1	90.67	346	04-02C08

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CLASS		BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
		142.5E	198 R	342	04-02C08
		200	249	346	04-02C08
		250	558	342	04-02C08
		559	566	346	04-02C08
		567	671	342	04-02C08
		DIG 1	DIG13	342	04-02C08
124	/				
		1	55	332	04-04D38
		56	77	331	04-04D38
		78	92	332	04-04D38
		DIG 1		332	04-04D38
125	/				
		ALL		323	03-07C30
126	/				
		ALL		345	04-03C38
127	/				
		ALL		132	03-08B17
128	/				
		1 A	23	335	04-04C34
		24 A	78	332	04-04C34
		79	171	336	04-04C34
		200.11	207.18	335	04-04C34
		303 A	303 R	336	04-04C34
		303.1	303.19	335	04-04C34
		304	361	336	04-04C34
		362	424	335	04-04C34
		425	580	247	04-06D14
		581	623	336	04-04C34
		630	914	335	04-04C34
		DIG 1	DIG27	335	04-04C34
130	/				
		ALL		333	04-04C10
131	/				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS AS OF 05/25/84

CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	ALL		332	04-04D38
132 /				
	ALL		332	04-04D38
133 /				
	ALL		311	03-05C05
134 /				
	1	42	133	03-07C06
	43	201	243	04-06C18
	DIG 1	DIG 2	243	04-06C18
135 /				
	ALL		331	34-03D68
136 /				
	200	242	223	04-10C36
	243	293	114	03-10B26
137 /				
	ALL		347	34-03D48
138 /				
	ALL		243	04-06C24
139 /				
	ALL		247	04-06D14
140 /				
	ALL		321	03-07C30
141 /				
	ALL		243	04-06C24
142 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 13
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CLASS		BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
		1	43	321	03-06C12
		44	57	321	03-06C17
144	/				
		ALL		321	03-06D12
145	/				
		ALL		323	03-07C30
147	/				
		ALL		326	03-07D16
148	/				
		1		111	03-10C24
		1.5		114	03-10C24
		2	4	111	03-10C24
		6	6.35	152	02-11D--
		9 C	31.57	111	03-10C24
		33	33.6	114	03-10C24
		35	125	111	03-10C24
		126.1		223	04-10C36
		127	131	111	03-10C24
		132		223	04-10C36
		133	162	111	03-10C24
		171	191	114	03-10C24
		400	442	111	03-10C24
149	/				
		ALL		223	04-10C33
150	/				
		ALL		241	04-06C10
152	/				
		1	112	312	03-04D10
		151	322	131	03-07C14
		323	329	312	03-04D10
		330 RF	374	131	03-07C14
		375	414	312	03-04D10

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS AS OF 05/25/84

CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	415	431	131	03-07C14
	DIG 1	DIG 7	131	03-07C14
	DIG 8		312	03-04D10
	DIG 9		131	03-07C14
	DIG10		312	03-04D10
	DIG11	DIG16	131	03-07C14
	DIG17		312	03-04D10
156 /				
	1	79	131	03-07C14
	80	89	138	03-07C14
	90	144	131	03-07C14
	145	147	138	03-07C14
	148	241	131	03-07C14
	242	271	138	03-07C14
	272.2	509	131	03-07C14
	510	522	138	03-07C14
	523	529	131	03-07C14
	530	536	138	03-07C14
	537	598	131	03-07C14
	600	624	134	03-09C04
	625	907	131	03-07C14
	DIG 1	DIG51	131	03-07C14
	DIG61	DIG114	134	03-09C04
157 /				
	ALL		323	03-07C34
159 /				
	ALL		133	03-07C14
160 /				
	ALL		355	03-04C24
162 /				
	ALL		133	03-07C06
163 /				
	ALL		326	03-07C17
164 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS AS OF 05/25/84 PAGE 15

CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	ALL		325	03-07D04
165 /	ALL		346	04-02C08
166 /	ALL		356	03-04C30
168 /	ALL		333	04-04D38
169 /	ALL		313	03-05D10
171 /	ALL		331	34-03D68
172 /	ALL		331	34-03D68
173 /	ALL		324	03-07C30
174 /	ALL		215	04-09D12
175 /	ALL		356	03-04C30
177 /	ALL		216	04-08D04
178 /	1	21	261	04-05C08
	22.01	22.19	222	04-10C35

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 16
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CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	23 A	36	261	04-05C08
	37		222	04-10C35
	38	98	261	04-05C08
	99		222	04-10C35
	100	120	261	04-05C08
179 /				
	1.1		261	04-05C08
	1.5FS	1.5S	222	04-10C36
	2 AM	5.5	261	04-05C08
	6.01	6.2	235	04-11D06
	6.3CC	7.1TP	261	04-05C08
	8 A	190	261	04-05C08
180 /				
	2.1	70.1	316	03-05E09
	71	90.6	316	03-05C34
	116	130	316	03-05E09
	131	163	316	03-05C34
	164	310	316	03-05E09
	311	336	316	03-05C34
	900	908	316	03-05C34
181 /				
	.5		222	04-10C36
	18	30	211	04-09B31
	101	125	222	04-10C36
	126	138	211	04-09B31
	139	140	222	04-10C36
	141		211	04-09B31
	142		222	04-10C36
	143	296	211	04-09B31
	400	402	222	04-10C36
	403	404	211	04-09B31
	DIG 1		211	04-09B31
182 /				
	ALL		355	03-04C24
184 /				
	ALL		221	04-10C16
185 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 17
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CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	ALL		352	34-03D70
186 /				
	ALL		311	03-05D10
187 /				
	1 A	28	311	03-05D10
	29 AB	29 Y	217	04-09D32
	30	98	311	03-05D10
	DIG 1		311	03-05D10
188 /				
	ALL		314	03-05C08
190 /				
	ALL		241	04-06C10
191 /				
	ALL		312	03-04C23
192 /				
	ALL		352	03-04C10
193 /				
	ALL		313	03-05D10
194 /				
	ALL		311	03-05D10
196 /				
	ALL		138	03-09C04
198 /				
	ALL		317	03-04D30
199 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 18
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CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	ALL		337	34-03D45
200 /				
	1 TK	41	214	04-08B03
	42 A	48 V	243	04-06C24
	49		243	04-06C24
	50 AA	50 R	214	04-08B03
	51 LM	51.17	243	04-06C24
	52 A	61.93	214	04-08B03
	62	69	243	04-06C24
	70	79	243	04-06C24
	80 A	151	214	04-08B03
	153 HS	165	243	04-06C24
	175	180	214	04-08B03
	181	340	243	04-06C24
	DIG 1	DIG47	214	04-08B03
201 /				
	ALL		138	03-08D06
202 /				
	81	151	138	03-08D06
	152	209	133	03-08D06
	210	230	138	03-08D06
	232	238	133	03-08D06
	239	270	138	03-08D06
	DIG 1		133	03-08D06
203 /				
	ALL		133	03-07C14
204 /				
	1 R	1 T	112	03-09C32
	1.5		223	04-10C16
	2	159	112	03-09C32
	159.11	160.1	151	02-10C15
	161	163 S	223	04-10C16
	164	435	112	03-09C32
	DIG 1	DIG13	112	03-09C32
206 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 19
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CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	ALL		241	04-06C10
208 /				
	ALL		116	03-09D06
209 /				
	1	3	135	03-08D12
	3.1	3.3	312	03-04D10
	4	44	135	03-08D12
	44.1	44.3	312	03-04D10
	45	508	135	03-08D12
	509	942	312	03-04D10
210 /				
	85	320	136	03-08B17
	321.1	321.5	134	03-08B17
	322	500.1	136	03-08B17
	500.2		134	03-08B17
	501	633	136	03-08B17
	634	655	134	03-08B17
	656	808	136	03-08B17
	900	928	136	03-08B17
	929		134	03-08B17
	DIG 1	DIG24	136	03-08B17
211 /				
	ALL		355	03-04C24
212 /				
	ALL		315	03-06B07
213 /				
	ALL		312	03-04D10
215 /				
	ALL		241	04-06C10
217 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS AS OF 05/25/84 PAGE 20

CLASS		BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
		ALL		241	04-06C10
219	/	ALL		213	04-09D04
220	/	ALL		241	04-06C10
221	/	ALL		311	03-05D10
222	/	ALL		311	03-05C08
223	/	ALL		247	04-06D14
224	/	ALL		243	04-06C24
225	/	ALL		324	03-06D04
226	/	ALL		242	04-07D14
227	/	ALL		327	03-06D10
228	/	ALL		325	03-07D04
229	/	ALL		241	04-06C10
231	/				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 21
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CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	ALL		331	34-03D68
232 /				
	ALL		333	04-04D38
234 /				
	ALL		324	03-06D04
235 /				
	1 A	201 R	211	04-09B09
	310	311	234	04-11C30
	375	386	233	04-11C30
	400	418	234	04-11C30
	419	495	233	04-11C30
236 /				
	ALL		344	04-03C33
237 /				
	ALL		344	04-03C33
238 /				
	ALL		312	03-04C23
239 /				
	ALL		313	03-05D10
241 /				
	ALL		326	03-07D30
242 /				
	ALL		245	04-07D36
244 /				
	1 TD	3	315	03-06C04
	3.1	3.3	221	04-10C35

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CLASS		BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
		4 A	13	315	03-06C04
		14		221	04-10C35
		15	237	315	03-06C04
		DIG 1	DIG 2	315	03-06C04
245	/				
		1	7	326	03-07C17
		8	11	326	03-06D10
246	/				
		ALL		312	03-04C23
248	/				
		ALL		355	03-04C24
249	/				
		ALL		138	03-08D06
250	/				
		200	239	255	04-08D04
		250	526	256	04-08C34
		548	578	255	04-08D04
251	/				
		1 A	156	345	34-03D48
		157	204	347	34-03D48
		205	280	345	34-03D48
		281	330	347	34-03D48
		331	369	347	34-03D48
		DIG 1	DIG 5	347	34-03D48
252	/				
		1	8.55R	223	04-10C16
		8.57	8.9	157	02-10C15
		9	58	118	03-09C07
		60	62	157	02-10C15
		62.2	62.9	113	03-09C07
		67	79	157	02-10C15
		79.1	79.5	131	03-07C14

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CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	80	181	157	02-10C15
	181.1	194	223	04-10C16
	299.01	299.7	223	04-10C16
	301.16	301.36	112	03-09C03
	301.4F	301.6S	113	03-09C07
	302	314	223	04-10C16
	315.01	358	223	04-10C16
	359 CG	363	138	03-05B09
	363.5	366	223	04-10C16
	367	370	157	02-10C15
	371		138	03-05B09
	372	377 R	126	02-09C10
	378 P	378 R	113	03-09C32
	380	385	223	04-10C16
	386		118	03-09E11
	387	478	223	04-10C16
	492		116	03-09C03
	500	521	157	02-10C15
	522 A	522 R	124	02-08C13
	523	581	157	02-10C15
	582	647	223	04-10C16
	700		223	04-10C16
	950	951	113	03-09D06
	960	965	223	04-10C16
	DIG 1	DIG17	157	02-10C15
	DIG18		116	03-10C04
	DIG19		157	02-10C15
254 /				
	1	50.4	323	03-07C34
	84	134.7	323	03-07C34
	199	417	245	04-07C34
	418	427	323	03-07C34
	900	903	245	04-07C34
	DIG 1	DIG10	323	03-07C34
	DIG11	DIG15	245	04-07C34
	DIG16		323	03-07C34
256 /				
	ALL		351	03-04A12
258 /				
	ALL		311	03-05C05
260 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 24
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CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	1		121	02-08C14
	96.5C	96.5T	116	03-09C03
	97	112 T	153	02-10C15
	112.5LH	112.5T	123	02-08A10
	112.7		125	02-08C14
	113	123.7	153	02-10C15
	124 B	139	123	02-08A10
	139.9		116	03-09C03
	140	208	124	02-08C14
	236.5	236.6	125	02-08C14
	239 A	239 B	122	02-08C14
	239 BB	239 DD	122	02-08C14
	239 D		129	02-08C14
	239 HM		129	02-08C14
	239 R		129	02-08C14
	239 AA	239 BA	122	02-08C14
	239 E		122	02-08C14
	239 EP	239 EQ	122	02-08C14
	239.1		126	02-08C14
	239.2	239.3T	129	02-08C14
	239.5	239.57	125	02-08C14
	239.6	239.95	121	02-08C14
	242.2		129	02-08C14
	243.3		122	02-08C14
	244.4		122	02-08C14
	245.1		129	02-08C14
	245.2R	245.4	122	02-08C14
	245.5	245.6	129	02-08C14
	245.7		122	02-08C14
	245.71		129	02-08C14
	330	330.3	121	02-08C14
	330.6	330.9	129	02-08C14
	349		121	02-08C14
	350 L	350 R	126	02-08C14
	351	396 R	129	02-08C14
	397	397.5	125	02-08C14
	397.6	397.7R	121	02-08C14
	398	429 R	124	02-08C14
	429.1	429.2	223	04-10C16
	429.3	448 R	124	02-08C14
	453 AB	453 AL	123	02-08C14
	453 AM	453 PH	121	02-08C14
	453 R		121	02-08C14
	453 RW	453 RZ	121	02-08C14
	453.1	453.3	121	02-08C14
	453.4	453.6	126	02-08C14

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CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	453.7	453.8	121	02-08C14
	453.9		126	02-08C14
	453.99	455 R	121	02-08C14
	456 NS	460	123	02-08C14
	462 A	462 R	124	02-08C14
	463		122	02-08C14
	464		121	02-08C14
	465 B	465 R	123	02-08C14
	465.1	465.9	121	02-08C14
	466	467	223	04-10C16
	500.5H	500.5R	126	02-08C14
	501.1	501.21	129	02-08C14
	502 A	502 R	126	02-08C14
	502.3		124	02-08D18
	502.4A	502.5R	126	02-08C14
	502.6	513.7	123	02-08C14
	543 PN	549	126	02-08C14
	550		122	02-08C14
	665 B	665 R	124	02-08D18
	684	708	121	02-08C14
	920	990	124	02-08C14
	998.11	998.19	151	02-10C15
	DIG14	DIG41	155	02-10C15
	DIG42		116	02-10C15
	DIG43		155	02-10C15
	DIG44		121	02-10C15
	DIG45	DIG47	155	02-10C15
261 /				
	ALL		135	03-08D34
264 /				
	.5		223	04-10C16
	1.1	2.7	137	03-08D06
	3 A	3 R	223	04-10C16
	4		137	03-08D06
	4.1	4.7	223	04-10C16
	5	574	137	03-08D06
	DIG 1	DIG84	137	03-08D06
266 /				
	44	100	111	03-10C24
	101		113	03-10C24

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS AS OF 05/25/84

CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	102	169	111	03-10C24
	170		113	03-10C24
	171	905	111	03-10C24
267 /				
	ALL		314	03-05C08
269 /				
	ALL		323	03-07C34
270 /				
	ALL		337	34-03D48
271 /				
	ALL		314	03-05C08
272 /				
	1 A	56.5R	331	34-03D68
	61	78	332	04-04D38
	85	92	331	34-03D68
	93	902	332	04-04D38
	DIG 1	DIG2	332	04-04D38
	DIG 3		332	34-04D68
	DIG 4	DIG 9	332	34-04D38
273 /				
	ALL		334	04-04C10
276 /				
	ALL		337	34-03D45
277 /				
	ALL		246	04-06C23
278 /				
	ALL		311	03-05C05
279 /				

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CLASS		BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
		ALL		322	03-06D10
280	/				
		ALL		316	03-05C34
281	/				
		ALL		327	03-07D04
282	/				
		ALL		327	03-06D10
283	/				
		ALL		327	03-07D04
285	/				
		ALL		351	03-04C10
289	/				
		ALL		247	04-06D14
290	/				
		ALL		217	04-0932
291	/				
		ALL		312	03-04C17
292	/				
		ALL		358	34-03D68
293	/				
		ALL		312	03-04D10
294	/				
		ALL		313	03-05D10
295	/				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS AS OF 05/25/84

CLASS		BEGINNING SUBCLASS		ENDING SUBCLASS	ART UNIT	SEARCH ROOM
		ALL			312	03-04C17
296	/					
		ALL			312	03-04D10
297	/					
		ALL			357	03-04C24
298	/					
		ALL			317	03-05C07
299	/					
		ALL			356	03-04C30
300	/					
		ALL			326	03-07C17
301	/					
		ALL			312	03-04D10
303	/					
		ALL			314	03-05C08
305	/					
		ALL			312	03-04D10
307	/					
		1		108	214	04-08B03
		109		110	212	04-08B03
		111		157	214	04-08B03
		200	A	325	254	04-07C34
		326		328	214	04-08B03
		350		364	254	04-07C34
		400		423	214	04-08B03
		424			252	04-07B24
		425		430	251	04-08E06
		440		608	254	04-07C34
308	/					

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CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	1 A	8.1	245	04-07D36
	10		212	04-09C08
	36.7	245	245	04-07D36
	DIG 2	DIG15	245	04-07D36
310 /				
	1		212	04-09C08
	10	273	212	04-09C08
	300		212	04-09C08
	301	305	222	04-10C36
	306	800	212	04-09C08
	DIG 1	DIG 6	212	04-09C08
312 /				
	ALL		357	03-04C24
313 /				
	ALL		266	04-05D10
314 /				
	ALL		214	04-08B03
315 /				
	1	9	266	04-04D10
	10	30	222	04-10C36
	32	363	266	04-04D10
	364	411	222	04-10C36
	DIG 1	DIG 7	266	04-04D10
318 /				
	1	17	217	04-09D32
	34		217	04-09D32
	35		212	04-09D32
	37	38	212	04-09D32
	39		217	04-09D32
	40	113	217	04-09D32
	114	135	212	04-09D32
	136	832	217	04-09D32
	DIG 1	DIG 2	217	04-09D32
320 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 30
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CLASS		BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
		1		212	04-09C08
		2	72	212	04-09C08
		DIG 1	DIG 2	212	04-09C08
322	/				
		ALL		212	04-09C08
323	/				
		ALL		212	04-09C08
324	/				
		51	65	267	04-05D06
		66	158 T	267	04-05D34
		160	180	267	04-05D06
		200	376	267	04-05D34
		377	402	267	04-05D06
		403	800	267	04-05D34
		DIG 1		267	04-05D06
328	/				
		1	226	254	04-07C34
		227	238	266	04-05D10
		239	271	254	04-07C34
329	.				
		ALL		252	04-07B15
330	/				
		1 A	3	252	04-07B15
		4	4.3	222	04-10C36
		4.5	311	252	04-07B15
331	/				
		ALL		252	04-07B15
332	/				
		1	7.5	252	04-07B15
		7.51		222	04-10C36

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 31
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CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	B	68	252	04-07B15
333 /				
	ALL		252	04-07C34
334 /				
	ALL		252	04-07C34
335 /				
	ALL		216	04-08D04
336 /				
	ALL		215	04-09D04
337 /				
	ALL		216	04-08D04
338 /				
	ALL		213	04-09D04
339 /				
	ALL		322	03-06D34
340 /				
	19 A	146	264	04-05D34
	146.2		232	04-11C30
	286 M	310 R	264	04-05D34
	311.1		264	04-05D34
	313	346	264	04-10C05
	347 AD	347 R	234	04-11C30
	348	407	264	04-10C05
	500	696	268	04-05D34
	700	825.98	264	04-05D34
	850	861	222	04-10C36
	870.01	996	264	04-05D34
343 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 32
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CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	5 AF	465	222	04-10C35
	700 MS	916	251	04-08D32
	DIG 1	DIG 2	251	04-08D32
346 /				
	ALL		216	04-08D04
350 /				
	1.1	3.86	257	04-08D32
	4.1	4.2	211	04-09B31
	6.1	6.91	257	04-08D32
	96.1	96.34	251	04-07C34
	97	116	257	04-08D32
	117	129	211	04-09B31
	130	257	257	04-08D32
	258	265	211	04-09B31
	266	590	257	04-08D32
	DIG 1	DIG 3	257	04-08D32
351 /				
	ALL		257	04-08D32
352 /				
	ALL		211	04-09E03
353 /				
	ALL		246	04-06C23
354 /				
	ALL		211	04-09B31
355 /				
	1	2	211	04-09B31
	3 BE	16	215	04-09B31
	18	133	211	04-09B31
356 /				
	1		222	04-10C35

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 33
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CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	2	3	255	04-08D04
	4		222	04-10C35
	4.5		255	04-08E05
	5		222	04-10C35
	6	27	255	04-08D04
	28	29	222	04-10C35
	30	140	255	04-08D04
	141		222	04-10C35
	142	151	255	04-08D04
	152		222	04-10C35
	153	448	255	04-08D04
357 /				
	ALL		253	04-07B15
358 /				
	1	83	262	04-05C08
	84	86	261	04-05C08
	87	113	262	04-05C08
	114	124	222	04-10C35
	125	126	262	04-05C08
	133	208	262	04-05C08
	209	224	261	04-05C08
	225	243	262	04-05C08
	244	244.2	235	04-11D06
	245	258	262	04-05C08
	259		222	04-10C35
	260	295	262	04-05C08
	296	304	262	04-05C08
	305		262	04-05C08
	310	334	262	04-05C08
	335	348	235	04-11D06
	901	905	262	04-05C08
	906	908	235	04-11D06
360 /				
	1	80	235	04-11D06
	81	137	233	04-11D06
361 /				
	1	246	214	04-08B03
	247	266	211	04-09C08

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 34
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CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	267	270	214	04-08B03
	271	326	211	04-09C08
	327	330	211	04-08B03
	331	396	214	04-08B03
	397	416	215	04-08B03
	417	432	214	04-08B03
	433	436	211	04-09C08
	437		214	04-08B03
362 /				
	1	60	223	04-10C06
	61	86	221	04-10C06
	87	156	221	04-10C16
	157	208	223	04-10C16
	209	361	221	04-10C16
	362	458	223	04-10C16
	800	812	221	04-10C16
363 /				
	ALL		212	04-09C08
364 /				
	130	194	236	04-11C30
	200		237	04-11C34
	300		232	04-11C34
	400	423	236	04-11C30
	424	467	234	04-11C30
	468	479	236	04-11C30
	480	512	234	04-11C30
	513		236	04-11C30
	513.5		237	04-11C30
	514	582	234	04-11C30
	600	608	236	04-11C30
	700	736	232	04-11C30
	737	741	236	04-11C30
	742	788	232	04-11C30
	800	864	236	04-11C30
	900		237	04-11C34
365 /				
	ALL		233	04-11D06
366 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 35
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CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	ALL		242	04-07D14
367 /				
	1	92	222	04-10C36
	93	94	268	04-05D34
	95	98	222	04-10C36
	99	140	222	04-10C36
	141	176	221	04-10C36
	177	191	222	04-10C36
	197	199	264	04-05D34
	900	912	222	04-10C36
368 /				
	ALL		217	04-09D32
369 /				
	1	32	235	04-11D06
	33	42	246	04-06C23
	43	54	235	04-11D06
	55	57	246	04-06C23
	58	62	235	04-11D06
	63		246	04-06C23
	64		235	04-11D06
	65	68	246	04-06C23
	69		235	04-11D06
	70		235	04-11D06
	71	75.2	246	04-06C23
	76		235	04-11D06
	77.1	82	246	04-06C23
	83	95	235	04-11D06
	96		246	04-06C23
	97		235	04-11D06
	98	99	246	04-06C23
	100	126	235	04-11D06
	127		246	04-06C23
	128	152	235	04-11D06
	153	173	246	04-06C23
	174	175	235	04-11D06
	176	274	246	04-06C23
	275	276	235	04-11D06
	277	292	246	04-06C23
370 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 36
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CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	ALL		263	04-05C34
371 /				
	ALL		236	04-11C30
372 /				
	ALL		251	04-08D32
373 /				
	ALL		214	04-08B03
374 /				
	ALL		246	04-06C24
375 /				
	1		263	04-05C34
	2.1	2.2	222	04-11C30
	3	122	263	04-05C34
376 /				
	ALL		221	04-10C36
377 /				
	ALL		254	04-07C34
378 /				
	ALL		256	04-08C34
381 /				
	1	28	261	04-05C08
	29	53	237	04-11C30
	54	124	261	04-05C08
382 /				
	ALL		266	04-05C10
383 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 37
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CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	ALL		241	04-06C10
384 /	ALL		245	04-07D36
400 /	ALL		337	34-03D68
401 /	ALL		332	04-04D38
402 /	ALL		327	03-06D12
403 /	ALL		351	03-04A12
404 /	ALL		356	03-04C30
405 /	ALL		351	03-04C10
406 /	ALL		313	03-05D10
407 /	ALL		321	03-06D12
408 /	ALL		322	03-06D34
409 /	ALL		322	03-07C17
410 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS AS OF 05/25/84 PAGE 38

CLASS		BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
		ALL		312	03-04C17
411	/				
		ALL		358	03-03C06
412	/				
		1	43	327	03-06D10
		900	902	327	03-06D34
413	/				
		ALL		321	03-07C17
414	/				
		1	228	317	03-05D32
		229	785	317	03-05D34
		786		317	03-04D30
		787		317	03-05D34
		900	921	317	03-05C07
415	/				
		ALL		341	04-03D08
416	/				
		ALL		341	04-03C10
417	/				
		ALL		343	04-03C10
418	/				
		ALL		343	04-03C10
419	/				
		ALL		223	04-10C36
420	/				
		ALL		111	03-10C24
422	/				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 39
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CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	1	185	134	03-09C04
	186	186.3	223	04-10C16
	187	312	134	03-09C04
	900	902	134	03-09C04
	903	907	223	04-10C16
423 /				
	1		113	03-09D06
	2	20	223	04-10C36
	21.1	248	113	03-09D06
	249	261	223	04-10C36
	262	659	113	03-09D06
	DIG 1	DIG19	113	03-09D06
424 /				
	1.1		223	04-10C36
	2		123	02-08C14
	3		128	02-08C14
	4	5	125	02-08C14
	6		123	02-08C14
	7.1		128	02-08C14
	9		128	02-08C14
	10		123	02-08C14
	11		128	02-08C14
	14	39	123	02-08C14
	40	47	125	02-08C14
	48	70	123	02-08C14
	71	84	125	02-08C14
	85		127	02-08C14
	86		123	02-08C14
	87		127	02-08C14
	88		127	02-08C14
	89		123	02-08C14
	90		123	02-08C14
	91	93	127	02-08C14
	94	113	128	02-08C14
	114	176	125	02-08C14
	177		123	02-08C14
	178		125	02-08C14
	179	183	123	02-08C14
	184	356	125	02-08C14
	357	361	123	02-08C14
	362	364	125	02-08C14
	365	366	123	02-08C14
425 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS AS OF 05/25/84 PAGE 40

CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	1	382 R	138	03-08B03
	382.2	472 R	138	03-08B07
	500	541	138	03-08B07
	542	817 R	138	03-08B07
	DIG 1	DIG249	138	03-08B07
426 /				
	1	6	132	03-08B13
	7	64	128	02-08C13
	66	524	132	03-08B13
	530	811	132	03-08B13
427 /				
	1	213	152	02-11D--
	213.3	213.36	223	04-10C16
	214	445	152	02-11D--
428 /				
	1	84	156	02-11D--
	85	97	154	02-11D--
	98	140	156	02-11D--
	141	402	154	02-11D--
	402.2	402.24	223	04-10C36
	403	537.7	154	02-11D--
	539.5		223	04-10C36
	540	543	154	02-11D--
	544	545	111	03-10C24
	546	566	223	04-10C36
	567	687	111	03-10C36
	688	922	154	02-11D--
	923	941	111	03-10C24
429 /				
	ALL		114	03-10C24
430 /				
	ALL		156	02-11E--
431 /				
	ALL		345	04-03C38
432 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 41
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CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	ALL		344	04-03C10
433 /				
	ALL		333	04-04D10
434 /				
	1	10	222	04-10C36
	11	433	334	04-04C10
435 /				
	1	2	128	02-09C07
	3		128	02-09C07
	172.1	172.3	127	02-09C07
	173		127	02-09C07
	174	182	128	02-09C07
	183	234	127	02-09C07
	235	239	128	02-09C07
	240	261	127	02-09C07
	262	316	128	02-09C07
	317		127	02-09C07
	800	948	127	02-09C07
436 /				
	1	7	134	03-09C04
	8	19	223	04-10C16
	20	183	134	03-09C04
	500		223	04-10C16
	501	503	128	02-08C13
	504		223	04-10C16
	505		223	04-10C16
	506	511	128	02-08C14
	512	518	128	02-08C13
	519	522	128	02-08C14
	523	541	128	02-08C13
	542	546	223	04-10C16
	547		128	02-08C14
	548		128	02-08C13
	800		223	04-10C16
	801	803	128	02-08C13
	804		223	04-10C16
	805	813	128	02-08C13
	814		128	02-08C14

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS AS OF 05/25/84 PAGE 42

CLASS		BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
		B15	B29	128	02-08C13
		900	910	134	03-09C04
440	/				
		ALL		315	03-06C04
441	/				
		ALL		315	03-06B07
445	/				
		ALL		325	03-07C17
455	/				
		1	25	263	04-05C34
		26	30	222	04-10C36
		31	620	263	04-05C34
464	/				
		ALL		245	04-07D36
474	/				
		ALL		356	03-04C30
493	/				
		ALL		327	03-06D10
494	/				
		ALL		242	04-07D14
501	/				
		ALL		118	03-09C32
502	/				
		1	423	116	03-09C03
		424	527	116	03-09E11
518	/				

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CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	700	728	126	02-09C10
520 /				
	ALL		155	02-10C15
521 /				
	25	39	155	02-10C15
	40	49.8	151	02-10C15
	50	921	153	02-10C15
523 /				
	1	105	155	02-10C15
	106	108	151	02-10C15
	109		153	02-10C15
	111	114	155	02-10C15
	115	120	153	02-10C15
	121	123	151	02-10C15
	124	128	155	02-10C15
	129		151	02-10C15
	130	132	155	02-10C15
	134	135	151	02-10C15
	136	138	153	02-10C15
	139	159	151	02-10C15
	160	161	155	02-10C15
	164	166	151	02-10C15
	167	170	155	02-10C15
	171	174	151	02-10C15
	175	181	153	02-10C15
	200	217	151	02-10C15
	218	219	153	02-10C15
	220	300	151	02-10C15
	303	426	155	02-10C15
	427	434	151	02-10C15
	435		153	02-10C15
	436	445	151	02-10C15
	446	449	153	02-10C15
	450		151	02-10C15
	451	461	153	02-10C15
	462	463	155	02-10C15
	464	468	151	02-10C15
	500	505	155	02-10C15
	506	512	153	02-10C15
	513		151	02-10C15

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CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	514	516	153	02-10C15
	517		155	02-10C15
	518	527	151	02-10C15
524 /				
	1	8	151	02-10C15
	9	58	153	02-10C15
	59	71	151	02-10C15
	72	78	153	02-10C15
	79		151	02-10C15
	80	185	153	02-10C15
	186	269	155	02-10C15
	270	274	153	02-10C15
	275	279	151	02-10C15
	280	322	155	02-10C15
	323	353	153	02-10C15
	354	391	155	02-10C15
	392	400	153	02-10C15
	401	456	151	02-10C15
	457	461	155	02-10C15
	462	473	153	02-10C15
	474	491	155	02-10C15
	492	497	151	02-10C15
	498		153	02-10C15
	499		155	02-10C15
	500		151	02-10C15
	501		155	02-10C15
	502	542	151	02-10C15
	543	587	155	02-10C15
	588		151	02-10C15
	589	590	153	02-10C15
	591		155	02-10C15
	592	595	153	02-10C15
	596		155	02-10C15
	597		151	02-10C15
	598		155	02-10C15
	599	607	153	02-10C15
	608	609	155	02-10C15
	610		151	02-10C15
	611	612	153	02-10C15
	650	700	151	02-10C15
	701	704	153	02-10C15
	705		151	02-10C15
	706	713	153	02-10C15
	714	731	155	02-10C15

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CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	732	735	153	02-10C15
	736	741	155	02-10C15
	742	754	153	02-10C15
	755	762	155	02-10C15
	763		151	02-10C15
	764		153	02-10C15
	765	778	155	02-10C15
	779	791	151	02-10C15
	792	796	155	02-10C15
	797	799	153	02-10C15
	800	846	155	02-10C15
	847		151	02-10C15
	848	856	155	02-10C15
	857	869	151	02-10C15
	871	881	153	02-10C15
	900	924	155	02-10C15
	925	929	155	02-10C15
525 /				
	7	8	155	02-10C15
	10	54	151	02-10C15
	54.1	54.45	155	02-10C15
	54.5	111	151	02-10C15
	111.5		155	02-10C15
	112	133	151	02-10C15
	133.5		155	02-10C15
	134	167	151	02-10C15
	167.5		155	02-10C15
	168	301	151	02-10C15
	301.5		155	02-10C15
	302	324	151	02-10C15
	326.1	338	155	02-10C15
	339	420	151	02-10C15
	420.5		155	02-10C15
	421	444	151	02-10C15
	444.5		155	02-10C15
	445	501	151	02-10C15
	501.5		155	02-10C15
	502	517	151	02-10C15
	517.5		155	02-10C15
	518	941	151	02-10C15
	942		155	02-10C15
526 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS AS OF 05/25/84

CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	ALL		155	02-10C15
527 /				
	100	403	153	02-10C15
	500	503	151	02-10C15
	600	604	153	02-10C15
528 /				
	1	3	153	02-10C15
	4	26	151	02-10C15
	26.5		153	02-10C15
	27	43	151	02-10C15
	44	195	153	02-10C15
	196	204	151	02-10C15
	205	245.5	153	02-10C15
	246	264	151	02-10C15
	265	308	153	02-10C15
	308.1	309.1	155	02-10C15
	310	369	153	02-10C15
	370	391	151	02-10C15
	392	503	153	02-10C15
	901		151	02-10C15
	902	906	153	02-10C15
	907	950	153	02-10C15
536 /				
	1.1		123	02-08C13
	2	3	155	02-10C15
	4.1	29	123	02-08C13
	30	50	155	02-10C15
	51	55.3	123	02-08C13
	56	111	155	02-10C15
	112	128	123	02-08C13
544 /				
	1	14	121	02-08C11
	15	30	122	02-08C11
	31	34	121	02-08C11
	35	46	129	02-08C11
	47	58.7	121	02-08C11
	59	178	129	02-08C11
	179	223	121	02-08C11

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 47
AS OF 05/25/84

CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	224	282	122	02-08C11
	283	293	129	02-08C11
	294	296	129	02-08C11
	297	362	122	02-08C11
	363		129	02-08C11
	364	373	122	02-08C11
	374	391	129	02-08C11
	392	410	122	02-08C11
546 /				
	1	12	122	02-09C07
	13	20	129	02-09C07
	21	25	121	02-09C07
	26	78	122	02-09C07
	79	97	121	02-09C07
	98	107	122	02-09C07
	108	110	129	02-09C07
	111	138	121	02-09C07
	139	149	129	02-09C07
	150	163	122	02-09C07
	164	182	129	02-09C07
	183		122	02-09C07
	184	185	121	02-09C07
	186	191	129	02-09C07
	192	206	121	02-09C07
	207	214	129	02-09C07
	215	241	129	02-09C07
	242	353	121	02-09C07
548 /				
	100	109	122	02-09C07
	110	119	129	02-09C07
	120	249	122	02-09C07
	250	256	129	02-09C07
	257	261	122	02-09C07
	262	269	129	02-09C07
	300	379	121	02-09C07
	400	415	122	02-09C07
	416	420	121	02-09D08
	421	439	122	02-09C07
	439	449	129	02-09D08
	450		122	02-09C07
	451		122	02-09C07
	452	459	129	02-09C07

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 48
AS OF 05/25/84

CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	460	491	122	02-09C07
	492	500	129	02-09C07
	501	502	129	02-09C07
	503	529	122	02-09C07
	530	540	121	02-09D08
	541	556	122	02-09C07
	557	559	121	02-09D08
	560	565	122	02-09C07
	566	579	121	02-09D08
549 /				
	1	58	121	02-09C07
	59	90	123	02-09C07
	200	232	129	02-09C07
	233		121	02-09C07
	234	251	129	02-09C07
	252	262	121	02-09C07
	263	274	129	02-09C07
	275	290	121	02-09C07
	291	296	129	02-09C07
	297	312	121	02-09C07
	313	334	129	02-09C07
	335	336	123	02-09C07
	337	356	129	02-09C07
	356	366	123	02-09C07
	367		129	02-09C07
	368		129	02-09C07
	369	428	123	02-09C07
	429	431	129	02-09C07
	432	455	123	02-09C07
	456	471	121	02-09C07
	472	509	129	02-09C07
	510	563	129	02-09C07
556 /				
	ALL		124	02-08D18
560 /				
	ALL		126	02-09C10
562 /				
	ALL		126	02-09C10
564 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS AS OF 05/25/84 PAGE 49

CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	1	224	124	02-09C10
	225	279	126	02-09C10
	280	296	126	02-09C10
	297	512	124	02-09C10
568 /				
	1	17	124	02-09C10
	18	30	122	02-09C10
	31		126	02-09C10
	32	36	122	02-09C10
	37		126	02-09C10
	38	40	122	02-09C10
	41	43	126	02-09C10
	44	61	122	02-09C10
	63	64	126	02-09C10
	65	74	122	02-09C10
	300	923	126	02-09C10
	924	949	223	04-10C16
	950	959	126	02-09C10
570 /				
	ALL		124	02-08C13
585 /				
	1	6	116	03-09C03
	6.3	6.6	157	02-10C15
	7	956	116	03-09C03
604 /				
	ALL		336	04-04C34
901 /				
	ALL		317	03-05C07
935 /				
	1	75	127	03-08C11
	76	88	128	02-08C11
	89	111	127	03-08C11
D01 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 50
AS OF 05/25/84

CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	ALL		292	04-10C06
D02 /				
	1	233	292	04-10C06
	234		291	04-10C06
	235	263	292	04-10C06
	264	452	292	04-10C06
D03 /				
	ALL		292	04-10C06
D04 /				
	ALL		291	04-10C06
D06 /				
	300	625	292	04-10C06
D07 /				
	1	58	292	04-10C06
	68		292	04-10C06
	70	152	292	04-10C06
	213		292	04-10C06
	300	322	292	04-10C06
	323	324	291	04-10C06
	325	330	292	04-10C06
	331	351	291	04-10C06
	352	361	292	04-10C06
	362	375	291	04-10C06
	376	401	292	04-10C06
	402	408	291	04-10C06
	409	415	292	04-10C06
D08 /				
	1	17	291	04-10C06
	18		292	04-10C06
	19	32	291	04-10C06
	33	43	292	04-10C06
	44	47	291	04-10C06
	48	50	292	04-10C06
	51	56	291	04-10C06

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 51
AS OF 05/25/84

CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	57		292	04-10C06
	58	101	291	04-10C06
	102	104	292	04-10C06
	105	499	291	04-10C06
D09 /				
	ALL		292	04-10C06
D10 /				
	1	103	292	04-10C06
	104	121	291	04-10C06
	122	132	292	04-10C06
D11 /				
	1	142	292	04-10C06
	143	156	291	04-10C06
	157	184	292	04-10C06
D12 /				
	ALL		291	04-10C06
D13 /				
	ALL		291	04-10C06
D14 /				
	1	39	292	04-10C06
	52	67	291	04-10C06
	68	99	292	04-10C06
	100	117	291	04-10C06
D15 /				
	1	9	291	04-10C06
	9.1	9.3	292	04-10C06
	10	33	291	04-10C06
	66	78	292	04-10C06
	79	199	291	04-10C06
D16 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 52
AS OF 05/25/84

CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	1	47	292	04-10C06
	100	137	291	04-10C06
D17 /				
	ALL		292	04-10C06
D18 /				
	ALL		292	04-10C06
D19 /				
	ALL		292	04-10C06
D20 /				
	1	9	292	04-10C06
	10		291	04-10C06
	11		292	04-10C06
	12	21	291	04-10C06
	22	28	292	04-10C06
	29	99	291	04-10C06
D21 /				
	1	227	292	04-10C06
	228	231	291	04-10C06
	232	235	292	04-10C06
	236	239	291	04-10C06
	240	255	292	04-10C06
D22 /				
	ALL		291	04-10C06
D23 /				
	ALL		291	04-10C06
D24 /				
	ALL		291	04-10C06
D25 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 53
AS OF 05/25/84

CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	ALL		291	04-10C06
D26 /				
	ALL		291	04-10C06
D27 /				
	ALL		291	04-10C06
D28 /				
	1	3	291	04-10C06
	4	62	292	04-10C06
	63	64	291	04-10C06
	65	99	292	04-10C06
D29 /				
	ALL		291	04-10C06
D30 /				
	ALL		291	04-10C06
D32 /				
	ALL		291	04-10C06
D33 /				
	ALL		292	04-10C06
D34 /				
	1	38	291	04-10C06
	39	46	292	04-10C06
D47 /				
	ALL		292	04-10C06
D59 /				
	ALL		292	04-10C06
D64 /				

CLASSES ARRANGED NUMERICALLY WITH ART UNIT ASSIGNMENTS PAGE 54
AS OF 05/25/84

CLASS	BEGINNING SUBCLASS	ENDING SUBCLASS	ART UNIT	SEARCH ROOM
	ALL		292	04-10C06
D92 /				
	ALL		292	04-10C06
D99 /				
	1	16	292	04-10C06
	17	24	291	04-10C06
	25	99	292	04-10C06

DEPARTMENT OF COMMERCE

Patent and Trademark Office

37 CFR Part 1

[Docket No. 40442-4042]

Proposed Rules for Patent Maintenance Fees

Agency: Patent and Trademark Office, Commerce

Action: Change of location for public hearing.

Summary: The public hearing scheduled for June 26, 1984, in the notice of "Proposed Rules for Patent Maintenance Fees" published on April 24, 1984, at 49 FR 17692-17698 and on May 8, 1984, in the Official Gazette will be held in Salon E-F, Crystal City Marriott Hotel, 1999 Jefferson Davis Highway (U.S. Rt. 1), Arlington, Virginia, instead of in Room 11C10 of Building 3, Crystal Plaza, as previously indicated. The hearing will begin at 9:30 A.M. Requests to present oral testimony at the hearing should be directed to R. Franklin Burnett by telephone at (703) 557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, and should be received on or before June 19, 1984.

For Further Information Contact: R. Franklin Burnett by telephone at (703) 557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Donald J. Quigg
Deputy Commissioner of Patents
and Trademarks

June 11, 1984
Date

PATENT NOTICES

Certificates of Correction for the Week of June 19, 1984

Re. 31,356	4,400,769	4,421,671	4,434,021
3,923,884	4,402,325	4,423,274	4,434,301
4,192,906	4,403,762	4,424,225	4,434,475
4,270,996	4,404,208	4,424,226	4,435,214
4,276,160	4,405,826	4,424,525	4,435,614
4,286,470	4,407,199	4,424,566	4,435,717
4,294,695	4,409,694	4,424,920	4,436,003
4,297,654	4,409,868	4,426,441	4,436,081
4,298,401	4,412,793	4,426,847	4,436,194
4,302,313	4,413,856	4,427,141	4,436,266
4,315,729	4,414,189	4,427,265	4,436,269
4,319,347	4,414,448	4,429,898	4,436,272
4,320,896	4,414,974	4,430,721	4,436,854
4,348,595	4,415,436	4,431,010	4,436,893
4,365,697	4,415,702	4,431,443	4,437,497
4,371,569	4,415,911	4,431,707	4,437,722
4,372,779	4,415,999	4,432,203	4,437,877
4,380,504	4,416,681	4,432,473	4,438,170
4,382,537	4,416,805	4,432,761	4,438,256
4,387,746	4,416,990	4,432,798	4,438,681
4,390,608	4,417,086	4,433,066	4,438,808
4,393,255	4,417,305	4,433,193	4,438,913
4,395,387	4,417,887	4,433,239	4,440,177
4,396,554	4,418,152	4,433,313	4,440,181
4,396,829	4,418,970	4,433,559	4,440,320
4,396,939	4,420,678	4,433,594	4,440,389
4,398,950	4,421,107	4,433,727	
4,400,167	4,421,574	4,433,890	

Disclaimer

4,433,955.—*Richard P. Johnston*, Morrow, Ohio. TURBINE ARRANGEMENT. Patent dated Feb. 28, 1984. Disclaimer filed Apr. 26, 1984, by the assignee, *General Electric Co.*

Hereby enters this disclaimer to claims 6, 7, 8 and 9 of said patent.

Dedications

3,472,011.—*Ernest Philip Rushton Scragg*, Sutton Grange, Macclesfield, England. TREATMENT OF ARTIFICIAL YARNS AND THREADS. Patent dated Oct. 14, 1969. Dedication filed June 25, 1982, by the assignee, *Lex Tex Ltd., Inc.*

Hereby dedicates said patent to the Public.

3,536,475.—*Jean Trub*, Carouge, Switzerland. METHOD OF MAKING PELLETS FROM A FINELY DIVIDED SOLID MATERIAL. Patent dated Oct. 27, 1970. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

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State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
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Arizona	Tempe: Science Library, Arizona State University	(602) 965-7140
California	Los Angeles Public L ibrary	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
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Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis—Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6670
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF May 12, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Action New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	4-08-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	9-29-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	9-30-82
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	4-21-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director	3-22-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	6-01-81
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	9-24-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	7-19-82
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-11-81
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	1-07-82
DESIGN, GROUP 290—K. L. CAGE, Director	2-01-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	8-03-82
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	6-10-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	6-08-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	5-14-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	10-15-81

Expiration of patents: The patents within the range of numbers indicated below expire during May 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,316,556 to 3,323,133, inclusive

Plant Patents ..... Numbers 2,734 to 2,745 inclusive

REEXAMINATIONS

JUNE 19, 1984

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,935,105 (211th)
TUBULAR FILTER IN SETTLER

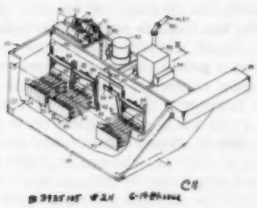
Stephen N. McEwen, Bowling Green, Ohio, assignor to Henry Filters, Inc., Bowling Green, Ohio

Reexamination Request Nos. 90/000,340, Mar. 4, 1983 and 90/000,366, May 3, 1983.

Reexamination Certificate for Patent No. 3,935,105, issued Jan. 27, 1976, Ser. No. 523,035, Nov. 12, 1974.

Int. Cl.³ B01D *27/12, 29/32*

U.S. Cl. 210—138



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **15–18** is confirmed.

Claims **1**, **2** and **19** are determined to be patentable as amended:

Claims **3–14** and **20–29**, dependent on amended claims, are determined to be patentable.

1. In an apparatus for separating solid particles from a liquid comprising: a settling tank having an apertured side wall, a filter in said settling tank, and pump means for sucking said liquid though said filter from said tank, the improvement comprising:

A. an assembly having an open sided chamber and a plurality of horizontal tubular filter elements comprising said filter communicating with said chamber, *a gasket interposed between the assembly and the side wall,*

B. releasable clamping means for *displacing said assembly in a direction normal to the tank side wall, the displacement of said assembly (1) compressing the gasket and (2)* holding the open side of said chamber in fluid tight communication with said side wall around said aperture in said side wall of said tank, and

C. duct means connecting said aperture *directly* to *the intake of* said pump means.

B1 4,302,920 (212th)
FILM WEB DRIVE STRETCH WRAPPING APPARATUS AND PROCESS

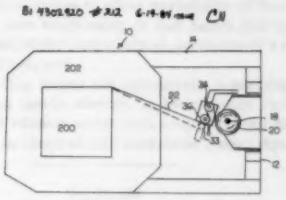
Patrick R. Lancaster, Anchorage, and William G. Lancaster, Louisville, both of Ky., assignors to Lantech Inc., Louisville, Ky.

Reexamination Request No. 90/000,463, Oct. 28, 1983.

Reexamination Certificate for Patent No. 4,302,920, issued Dec. 1, 1981, Ser. No. 96,384, Nov. 21, 1979.

Int. Cl.³ B65B *11/04*

U.S. Cl. 53—399



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **10**, **13–15**, **19**, **22–25**, and **28** are determined to be patentable as amended:

Claims **2–9**, **11**, **12**, **16–18**, **20**, **21**, **26**, **27** and **29–34**, dependent on amended claims, are determined to be patentable.

1. A process of making a unitary package by wrapping a load comprising the steps of:

a. positioning a roll of stretchable plastic material on a dispenser means adjacent to said load;

b. withdrawing a leading end of said plastic material from said dispenser means through a material web pre-stretching means comprising an upstream roller means and a downstream roller means;

c. holding said plastic material adjacent said load;

d. substantially synchronizing the relative surface speed of said material in said pre-stretching means to the surface speed of said load by relative rotation of the load and said dispensing means causing the film web to be pulled partially around the surfaces of said upstream and downstream roller means of said pre-stretching means, said upstream and downstream roller means being *rotationally* interconnected *so that the downstream roller means rotates faster than the upstream roller means;*

e. rotating said upstream and downstream roller means at different speeds by engaging said roller means with said moving material thereby driving said roller means, *said roller means being driven solely by engagement of said moving material with* the downstream roller means transporting the material at a faster rate of speed than the upstream roller means causing the material web to incur substantial elongation between said upstream and downstream roller means; and

f. wrapping the load with more than one revolution of previously elongated material.

REISSUES

JUNE 19, 1984

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,602

COATED TITANIUM DIOXIDE PIGMENT AND A PROCESS FOR THE PRODUCTION OF THE SAME

Pekka I. Makinen, Pori, Finland, assignor to Kemira Oy, Helsinki, Finland

Original No. 4,375,989, dated Mar. 8, 1983, Ser. No. 283,818, Jul. 16, 1981. Application for reissue Jun. 6, 1983, Ser. No. 501,502

Claims priority, application Finland, Jul. 18, 1980, 802279

Int. Cl.³ C09C *1/36*

U.S. Cl. 106—300 **7 Claims**

1. A titanium dioxide pigment, comprising a coating of an inorganic substance, the total amount of the inorganic coating, expressed as oxide, being at maximum about 0.5% of the weight of the pigment and further comprising a coating of an organic substance selected from the group comprising large-molecule fatty acids and their salts; organic silicon compounds, such as dimethyl polysiloxane; alcohols and polyalcohols.

4. A process for coating a titanium dioxide pigment to improve its dispersability comprising adding to an aqueous slurry of calcinated titanium dioxide pigment an inorganic water-soluble compound or an inorganic compound which can be brought to a water-soluble form in the slurry, the inorganic compound being added to the titanium dioxide pigment slurry in an amount which, expressed as an oxide, is about 0.05–0.5% of the weight of the titanium dioxide pigment; and by depositing it on the titanium dioxide pigment, and further comprising adding to said pigment slurry an organic substance selected from the group comprising large-molecule fatty acids and their salts; organic silicon compounds, such as dimethyl polysiloxane; alcohols and polyalcohols.

Re. 31,603

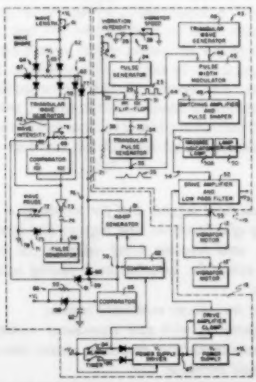
BODY MASSAGE APPARATUS

Earl A. Christensen, San Carlos, Calif., assignor to Andrew Electronics of Northern Calif., Inc., San Carlos, Calif.

Original No. 4,232,661, dated Nov. 11, 1980, Ser. No. 875,984, Feb. 8, 1978. Application for reissue Nov. 8, 1982, Ser. No. 440,181

Int. Cl.³ A61H *1/00*

U.S. Cl. 128—33 **22 Claims**



1. Apparatus for administering massage actions to a person in intimate contact with a structure comprising:

at least one vibrator motor adapted to be operatively connected to said structure to vibrate said structure in accordance with the waveform of a signal energizing said motor;

a pulse train generator controllable to generate a train of pulses of continually varying amplitude versus time relationship;

a function generator controllable to generate a modulating signal of varying amplitude versus time relationship different than that of said train of pulses and selected relative to said train of pulses to simulate therewith a traveling wave pattern, the frequency of said modulating signal being significantly lower than the frequency of said train of pulses;

a first coupling means for combining the modulating signal with the train of pulses to effect modulation of the amplitude versus time relationship of said pulses and thereby produce a modulated output signal simulative of a traveling wave pattern; and

a second coupling means for operatively connecting said first coupling means directly to the vibrator motor to energize said vibrator motor with a signal having substantially the same shape as said modulated output signal.

Re. 31,604

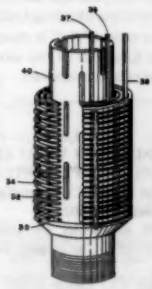
MULTI-LAYER WELL SCREEN

William G. Bearden, and George C. Howard, both of Tulsa, Okla., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Original No. 3,712,373, dated Jan. 23, 1973, Ser. No. 77,492, Oct. 2, 1970. Application for reissue Dec. 22, 1976, Ser. No. 753,049

Int. Cl.³ E21B *43/08*

U.S. Cl. 166—232 **3 Claims**



9. A sand screen filter assembly for use in a wellbore which comprises:

a slotted section of pipe;

a first layer of wire screen concentrically positioned about said pipe and having a fixed spacing "c" between wires of said first layer;

a second layer of wire screen positioned about and spaced from said first layer and having fixed spacing "b" between wires of said second layer, said spacing "b" being greater than said spacing "c";

a third layer of wire screen positioned about and spaced from said second layer and having a spacing "a" between wires of said third layer, said spacing "a" being greater than said spacing "b";

a plurality of longitudinal rods secured between and to said

layers of wire screens to give fixed radial spacing with such spacing having no filtering material therein; and

the radial distance between said first layer and said second layer of wire screen is at least as great as said spacing "b" and the radial distance between said second and third layers of wire screen is at least as great as said spacing "a".

Re. 31,605

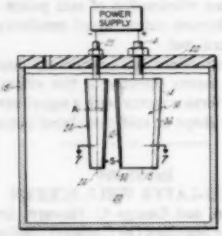
METHOD AND APPARATUS FOR ELECTROCHEMICALLY FINISHING AIRFOIL EDGES

James W. Neal, Columbia; Joseph F. Loersch, Bolton, and Robert G. Adinolfi, Manchester, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Original No. 4,217,190, dated Aug. 12, 1980, Ser. No. 50,388, Jun. 20, 1979. Application for reissue Aug. 6, 1982, Ser. No. 405,858

Int. Cl.³ C25F *3/14*; B23P *1/04, 1/14, 1/20*

U.S. Cl. 204—129.35 **5 Claims**



1. The method of electrochemically milling the edge of a workpiece wherein different quantities of material must be removed from the workpiece edge at different locations along its length, characterized by providing a shaped electrode having a unit surface area A and spacing distance S between the electrode surface and the workpiece edge, as measured at points along the length of the electrode, wherein both A and S are changed so that the ratio of A/S is changed to lower values at points proximate to locations of the workpiece edge where less unit weight of material is removed.

Re. 31,606

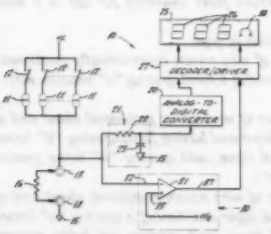
DIGITAL OHMMETER WITH ELECTRICAL CONTINUITY TESTER

John B. Crosby, Yorba Linda, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Original No. 4,228,394, dated Oct. 14, 1980, Ser. No. 961,154, Nov. 16, 1978. Application for reissue Jul. 6, 1981, Ser. No. 280,430

Int. Cl.³ G01R *27/02*

U.S. Cl. 324—62 **17 Claims**



8. A digital test instrument for measuring resistance comprising:

a pair of input terminals adapted for connection across a circuit element of unknown resistance;

means for producing a voltage across the input terminals the value of which indicates the value of the unknown resistance;

a digital display and means for operating the display to indicate the value of the unknown resistance, the digital test instrument exhibiting a measuring time delay before the display indicates the value of the unknown resistance; and

means for substantially instantaneously detecting and signaling the presence of electrical continuity across the input terminals including:

a continuity indicator;

means for energizing the continuity indicator; and

means for selecting whether the continuity indicator is energized according to whether the voltage across the input terminals is greater or less than a reference voltage.

Re. 31,607

CIRCUMFERENTIAL ACOUSTICAL DETECTOR

Charles B. Vogel, and Gene T. Worrell, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Original No. 4,130,816, dated Dec. 19, 1978, Ser. No. 819,806, Jul. 28, 1977. Application for reissue Sep. 29, 1980, Ser. No. 191,797

Int. Cl.³ G01V *1/40*

U.S. Cl. 367—86 **21 Claims**

16. An acoustical logging tool for obtaining a circumferential acoustical log of a borehole, said logging tool comprising:

a housing, said housing being adapted for attachment to a logging cable for lowering and raising said housing in a borehole;

at least two transducer mounting means;

means cooperating with said transducer mounting means for forcing said transducer mounting means into contact with the wall of said borehole; and

at least one cylindrical transducer disposed in each transducer mounting means, the longitudinal axis of said transducer being substantially aligned with the axis of the borehole when said transducer mounting means are in contact with the wall of the borehole.

Re. 31,608

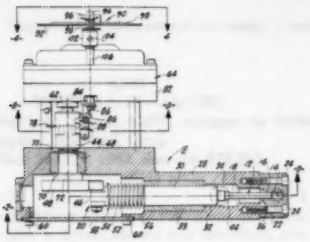
FLUID PUMP MECHANISM

Haakon T. Magnussen, Jr., Pinole, Calif., assignor to Altex Scientific, Inc., Berkeley, Calif.

Original No. 4,131,393, dated Dec. 26, 1978, Ser. No. 761,433, Jan. 21, 1977. Application for reissue Dec. 29, 1980, Ser. No. 220,622

Int. Cl.³ F04B 49/00

U.S. Cl. 417—22 29 Claims



1. A fluid pump mechanism for delivering fluid against a back pressure comprising:

a. piston, at least a portion of which is reciprocative within a chamber having a fluid inlet and fluid outlet said piston having a first end portion and a second end portion, said first end portion contacting the fluid, said piston being capable of filling and emptying said chamber;

b. motive means for reciprocating said piston within said chamber at a selected substantially constant speed, said substantially constant speed determined by constant speed setting means for setting said motive means at a substantially constant speed, said motive means at a substantially constant speed, said motive means contacting said second end portion of said piston;

c. valve means for permitting the filling and emptying of said chamber coordinated with the pressure exerted by said piston within said chamber; said piston, motive means and valve means cooperating to produce a time duration of fluid flow from said chamber ralative to said selected substantially constant speed;

d. control means for changing the speed of said motive means at a preselected portion of the time period of said reciprocation of said piston within said chamber, said control means including detection means for detecting and signaling the inception of the chamber filling stroke of said piston and the termination of said chamber filling stroke of said piston; filling means for changing said constant speed of said motive means at the inception of the chamber filling stroke of said piston and returning said motive means to said constant speed at the termination of said chamber filling stroke of said piston said filling means being activated and deactivated by said detection means signal.

Re. 31,609

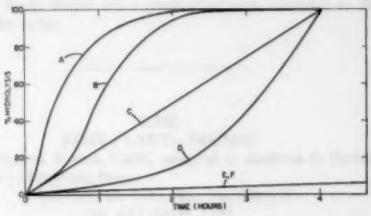
METHOD OF PREPARING A CONTROLLED-RELEASE PHARMACEUTICAL PREPARATION, AND RESULTING COMPOSITION

Barry D. Sears, Marblehead, Mass., assignor to Lipid Specialties, Inc., Cambridge, Mass.

Original No. 4,145,410, dated Mar. 20, 1979, Ser. No. 807,373, Jun. 17, 1977. Continuation-in-part of Ser. No. 731,132, Oct. 12, 1976, Pat. No. 4,086,257, Ser. No. 770,290, Feb. 22, 1977, Pat. No. 4,097,503, and Ser. No. 770,407, Feb. 22, 1977, Pat. No. 4,097,502. Application for reissue Dec. 14, 1979, Ser. No. 103,463

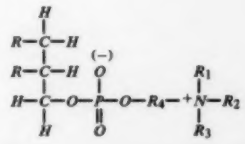
Int. Cl.³ A61K 9/52; B01J 13/02

U.S. Cl. 424—19 10 Claims



1. In a method for preparing a controlled-release pharmaceutical composition for oral administration, the method which comprises: forming an aqueous emulsion of phospholipid encapsulating agent with the pharmaceutical compound whose release is to be controlled; coagulating the emulsion to entrap the pharmaceutical compound within the phospholipid agent; and recovering the pharmaceutical composition as prepared, the improvement which comprises:

employing as the phospholipid encapsulating agent a synthetic fatty-acid phosphatidyl [C_1–C_{10} alkyl-N-C_1–C_4 trialkyl] quaternary-ammonium hydroxide compound[, with the proviso that the alkyl of the alkyl-N group is not an ethyl group when the alkyl groups of the N-trialkyl radicals are methyl groups] *represented by the structural formula:*



wherein R_4 is a C_1–C_{10} methylene radical and R_1, R_2 and R_3 are C_1–C_4 alkyl radicals, with the proviso that R_1, R_2 and R_3 at the same time are not all methyl radicals and wherein R is a fatty-acid radical, and which phosphatidyl quaternary-ammonium compound is resistant to enzymatic hydrolysis of phospholipase C.

PLANT PATENTS

GRANTED JUNE 19, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,246

ROSE PLANT—JACIBE

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Sep. 29, 1982, Ser. No. 428,315
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its compact plant, pointed, orange-red buds and flowers and mild fragrance.

5,247

ROSE PLANT—SCANDINAVIAN

Erik Svensson, Kavlinge, Sweden, assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Oct. 13, 1982, Ser. No. 434,116
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—28 1 Claim

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the described bud and bloom color set forth above on a plant otherwise identical to the variety Mercedes.

5,248

ROSE PLANT—JACJEM

Jose E. Vargas, Wasco, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Dec. 13, 1982, Ser. No. 448,921
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—3 1 Claim

1. A new and distinct variety of rose plant of the climber class, substantially as herein shown and described, characterized particularly as to novelty by being substantially identical with its parent variety, Jacjem, U.S. plant patent application Ser. No. 299,024 (now U.S. Plant Pat. No. 5,001), in almost every respect, but being distinguished therefrom by its long, strong canes which attain a mature height of at least ten feet or more, indicative of its climbing habit of growth.

PATENTS

GRANTED JUN. 19, 1984

ERRATA

For CLASS	See PATENT NO.
446–112	4,454,678
446–290	4,454,679
356–323	4,455,097
524–145	4,455,265
428–446	4,455,331
346–200	4,455,346

PATENTS

GRANTED JUNE 19, 1984

GENERAL AND MECHANICAL

4,454,611

HEAT RESISTANT PROTECTIVE HAND COVERING

Richard P. Tschirch, Westwood; Kenneth R. Sidman, Wayland, and Irving J. Arons, Peabody, all of Mass., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 30, 1982, Ser. No. 393,586
Int. Cl.[3] A41D *19/00*
U.S. Cl. 2—161 R 9 Claims

1. A heat-resistant, protective glove comprising:
a shell having an inner surface and an outer surface and generally defining a palm side, a backside, and an opening for insertion of a wearer's hand, said shell being made of a fabric of a temperature-resistant aromatic polyamide fiber;
a coating of a flame-resistant elastomer substantially covering the outer surface of said shell; and
a liner generally conforming and secured to said shell, said liner overlying said inner surface of said shell and comprising a felt fabric of a temperature-resistant aromatic polyamide fiber.

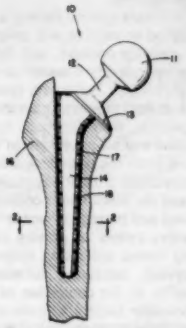
4,454,612

PROSTHESIS FORMATION HAVING SOLID AND POROUS POLYMERIC COMPONENTS

John M. McDaniel, and Niles L. Noblitt, both of Warsaw, Ind., assignors to Biomet, Inc., Warsaw, Ind.

Continuation-in-part of Ser. No. 147,374, May 7, 1980. This application Aug. 10, 1981, Ser. No. 291,427
Int. Cl.[3] A61F *1/24*
U.S. Cl. 3—1.913 6 Claims

1. A prosthesis adapted for fixation in mammalian bone structure by natural growth intrusion of bone into the surface of the prosthesis over a time interval, said prosthesis comprising a load-bearing member, a non-porous encapsulating coating of high density polyethylene enclosing at least a portion of said member, and a mass of randomly arranged high density polyethylene fibers overlying said encapsulating coating to provide a field for said bone growth intrusion having a porosity of about 50%, the contiguous points of the fibers being bonded to each other and to said encapsulating coating.

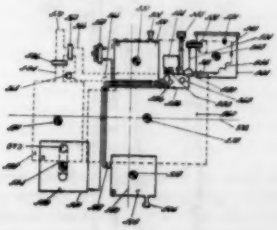


4,454,613

SELF-CONTAINED, COMPACT TOWABLE FACILITY HAVING MAXIMIZED BALANCED WATER STORAGE, DRAIN WATER COLLECTION AND WASTE WATER ISOLATION SYSTEMS

William A. Palmer, 6525 Green Valley Cir., No. 216, Culver City, Calif. 90230

Continuation-in-part of Ser. No. 129,180, Mar. 10, 1980, Pat. No. 4,332,040. This application May 28, 1982, Ser. No. 383,203
Int. Cl.[3] B60R *15/00*
U.S. Cl. 4—300 20 Claims



1. A compact self-contained towable facility including sanitation components and electrical, gas and water distribution systems therefor, and having a minimum size and weight while maximizing the volume of water carried thereby comprising
a rigid frame;
means operatively connected to said rigid frame for coupling the rigid frame to a towing vehicle;
means for mounting a plurality of wheels on said rigid frame at preselected distances relative to the lateral centerline of the rigid frame;
a multistage potable water storage and drain and waste water collection and isolation system including
a potable water storage system having a predetermined volume and operatively attached to the frame and formed into a geometrical shape to enable the collective center of gravity thereof to be located at approximately the centerline of the axle independent of the volume of potable

water stored in the potable water system and the amount of potable water withdrawn therefrom;

a grey water collection system having a predetermined volume and adapted to receive and collect drain water having a low impurity content, said grey water collection system being operatively coupled to said frame between the wheels of said axle and positioned under said potable water storage system;

a black water isolation system having a predetermined volume and adapted to receive and isolate waste water having a high impurity content, said black water isolation system being operatively coupled to aid frame and adjacent to the grey water collection system; and

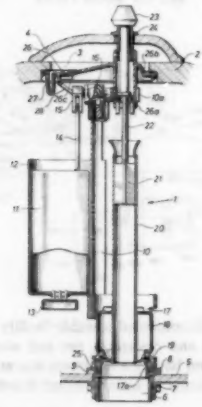
water system distribution means operatively coupled to said multistage potable water storage and drain and waste water collection and isolation system which permits water to be removed from the potable water storage system and to be transferred into at least one of the grey water collection system and the black water collection system wherein the withdrawal and passage of water therebetween results in the collective center of gravity of the potable water systems, grey water collection system and black water collection system remaining substantially at the same location relative to the centerline of said rigid frame to enable the towable facility to maintain the variations of force applied by the connecting means for coupling said rigid frame to a towing vehicle over a selected limited force range.

4,454,614

VALVE ARRANGEMENT FOR WATER TOILETS

John H. Gustafsson, Bromölla, and Tord E. H. Fröberg, Kristianstad, both of Sweden, assignors to Ifo Sanitar AB, Bromolla, Sweden

Filed Dec. 27, 1982, Ser. No. 453,547
Claims priority, application Sweden, Jan. 15, 1982, 8200222
Int. Cl.³ E03D *1/36*
U.S. Cl. 4—366 **4 Claims**



1. A valve arrangement for a gravity discharge water toilet flush tank, said valve arrangement designed as an elongate, vertically disposed integral unit, comprising:

a water supply valve (**16**);

float means (**11**) disposed within the tank and operatively coupled to the supply valve for controlling the opening and closing thereof;

a flush valve (**18**);

means (**17*a***, **25**) for sealing a lower end of said unit to a flush water outlet (**6**) of the tank, said means being slidable in a vertical direction but fixed in the horizontal direction; and

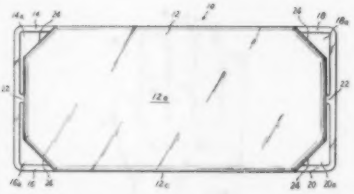
yoke means detachably retaining the unit in its vertically sealed position, said yoke means (**26**) being located at an upper end of the unit and cooperating with an inner surface of a top wall (**2**) of said tank which surrounds an opening (**3**) thereof covered by a tank lid (**4**).

4,454,615

AIR PAD WITH INTEGRAL SECUREMENT STRAPS

John Whitney, Dorado Beach, P.R., assignor to Medisearch PR, Inc., Guayama, P.R.

Filed May 3, 1982, Ser. No. 374,152
Int. Cl.³ A47C *27/08*
U.S. Cl. 5—449 **3 Claims**



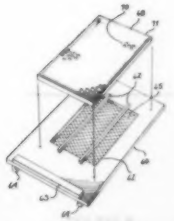
1. A rectangular fluid-tight pad of the type formed of sheets of film material and intended for use on a rectangular mattress, including in combination securement straps at at least two of the four corners of said pad formed out of at least one of said sheets of film material forming said pad and therefore homogeneous therewith, each of said straps at said corners of said pad extending from the ends of said pad adjacent the center thereof and from the side of said pad at a point spaced from the corner, said straps being of a length, flexibility and configuration to be positioned around and under a corner of said mattress to secure said pad thereto.

4,454,616

APPARATUS FOR COLLECTING PROPOLIS FROM A BEE COLONY

Charles H. Robson, 6241 S. 30th St., Phoenix, Ariz. 85040

Filed May 28, 1982, Ser. No. 383,065
Int. Cl.³ A01K *47/06*
U.S. Cl. 6—4 R **8 Claims**



1. In combination with apparatus for collecting hive products from a bee colony of the type having a bee passageway therein which communicates between a hive body and the external environment, said bee passageway containing scraper means for dislodging pollen from bees passing therethrough, the improvement which comprises:

(a) scraper means which extend to an outer wall of the hive body to permit withdrawal therefrom;

(b) a screen dimensioned to fit within said bee passageway and having a multiplicity of small openings therein, said openings providing ventilation through the passageway and preventing the passage of bees therethrough; and

(c) means for removably placing said screen on said scraper

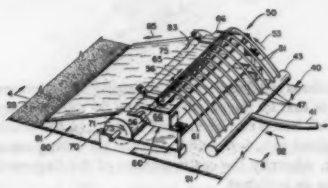
means and permitting withdrawal to outside the hive body.

4,454,617

IMMISCIBLE SEGMENTED DISTRIBUTOR FOR RANDOM DYEING OF TEXTILES

Danny Moates, Dalton, and Michael L. Chadwick, Calhoun, both of Ga., assignors to Celanese Corporation, New York, N.Y.

Filed Dec. 6, 1982, Ser. No. 447,040
Int. Cl.³ D06B 1/06
U.S. Cl. 8—151 7 Claims



1. In the multi-color continuous dyeing of a moving sheet of textile with sharply defined specks forming no pattern from distribution of colors, distribution of sizes, distribution of shapes, or attenuation of shapes, an off-textile forming means for uniformly distributing an aqueous immiscible gel mixture upon said sheet of textile, comprising:

A. a smooth-surfaced slide which is inclined at an angle of 30°–40° and has a lower discharge edge and an upper edge, said lower discharge edge being vertically spaced from said sheet of textile;

B. a roller, having a cylindrical surface which said upper edge lightly contacts;

C. an overflow pan which comprises a sidewise-extending lip having an edge which lightly contacts said cylindrical surface, said edge of said lip and said upper edge of said slide being arcuately separated by about 40°–50° measured over the top of said cylindrical surface and said overflow pan being adapted to contain said aqueous immiscible gel mixture and to provide a thin layer of said mixture above said sidewise-extended overflow lip, said layer having a liquid surface which is parallel to the axis of said roller and approximately in alignment with the top of said cylindrical surface, whereby said cylindrical surface functions as a dam for said liquid within said overflow pan and revolves from said lip toward said upper edge;

D. a conveying, aligning, and oscillating means for conveying said aqueous immiscible gel mixture to said overflow pan as a plurality of separate streams which are downwardly directed and linearly spaced, for aligning said streams with said overflow pan, and for oscillating said aligned streams; and

E. a manifold assembly comprising an inlet conduit, a manifold which contains, distributes, and mixes said gel mixture and which is flow connected to said conveying, aligning, and oscillating means.

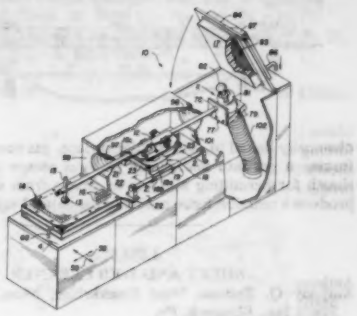
4,454,618

SYSTEM AND METHOD FOR FORMING CUSTOM-MADE SHOE INSERT

Donald B. Curchod, Saratoga, Calif., assignor to Amfit, Inc., Sunnyvale, Calif.

Filed Sep. 2, 1980, Ser. No. 183,010
Int. Cl.³ A43D 9/00
U.S. Cl. 12—1 R 37 Claims

1. A system for forming a custom-made insert for a given person's shoe in which the support surface of the insert is shaped to substantially correspond to the negative image of the undersurface of the person's foot comprising impression means for selectively forming a configuration defining the contour of the undersurface of a given person's foot, controllable means operable while forming said configuration for yieldingly urging said impression means against the undersurface of a given person's foot, cutting means for shaping a blank of material following the contour defined by said configuration, means



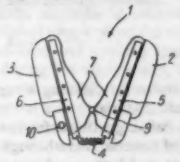
for following said configuration, means for moving the cutting means in response to the movements of the last named means, and means for disposing a blank of said material in position to be acted upon by said cutting means to be shaped to the contour of the undersurface of a given person's foot.

4,454,619

GLUE PRESS FOR MAKING ANKLE BOOTS

Lucien Bichet, Dravell, France, assignor to Anver, Maisons Alfort, France

Filed Apr. 12, 1982, Ser. No. 367,352
Claims priority, application France, May 6, 1981, 81 08962
Int. Cl.³ A43D 11/00
U.S. Cl. 12—54.2 4 Claims



1. Gluing press for exerting pressure on ankle boots, high boots or similar articles, said press comprising a flexible pocket or elastic membrane that is adjustable in height and serves as a means for exerting a uniform enveloping pneumatic or hydraulic pressure, between the glued insole and the mounted upper of the footwear, said footwear being held between locking elements when pressure is exerted by the pocket, said locking elements comprising a combination of a single shaper enveloping the upper and a toe support which contacts the base of said upper, and said press acting to glue the entire footwear insole to the upper in a single operation and to do so with substantially no deformation of said footwear being glued.

4,454,620

SPAN CONSTRUCTION

Howard L. Barkdull, Jr., 15117 Edgewater Dr., Lakewood, Ohio 44107

Filed Jan. 6, 1982, Ser. No. 337,317
Int. Cl.³ E01D 11/00
U.S. Cl. 14—20 8 Claims

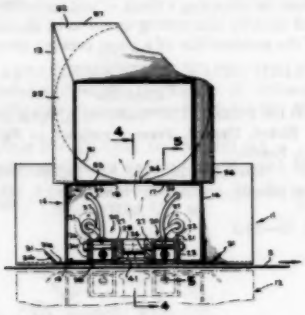
1. A naturally sagging span construction comprising two opposing end supports, a flexible sheath attached to each of

said end supports to form tubular a surface extending between said end supports, a plurality of longitudinal cables anchored to said end supports, said cables being disposed along and mechanically linked to, said tubular surface, gas source means for forcing a gas into said sheath and gas escape means in said sheath for permitting said gas to escape from said sheath to produce a reaction force reducing the natural sag of said span.

4,454,621
SHEET AND WEB CLEANER

Anthony Q. Testone, West Stockbridge, Mass., assignor to Static Inc., Skippack, Pa.

Filed Jan. 15, 1982, Ser. No. 339,476
Int. Cl.³ B08B 5/02, 5/04
U.S. Cl. 15—1.5 R **27 Claims**



1. In apparatus for cleaning a running length of a sheet or web of flaccid material,

(a) means defining a throat for the passage of a sheet or web of flaccid material therethrough comprising spaced, parallel plates, and having a throat entry and a throat exit,

(b) means for supporting the sheet or web of flaccid material in the throat without substantial engagement therewith comprising means for blowing ionized air from each said plate toward the other plate to engage both sides of the sheet or web,

(c) means for sucking air through each said plate, and

(d) diverging guide plates at the throat entry extending from each said throat defining plate.

4,454,622
FINGERNAIL POLISH BRUSH

Donna L. Poppendieck, Paul-Lagarde-Str. 22, D-8000 Munich 21, Fed. Rep. of Germany

Filed Mar. 31, 1981, Ser. No. 249,737
Int. Cl.³ A46B 9/02
U.S. Cl. 15—167 B **1 Claim**

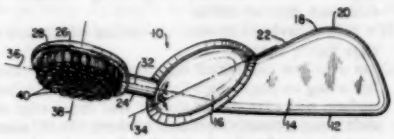
1. A fingernail polish brush used for the application of fingernail polish onto a fingernail comprising a rotationally symmetrical tuft of hairs secured to the front end of a brush stem, said tuft of hairs being arranged in the form of a plurality of concentric rings, the hairs in each ring having the same length, the length of each ring increasing gradually from one ring to the next from the outer perimeter of the tuft toward the center thereof where the center portion forms a dome-shaped contour, the overall contour of the brush tuft from the outer perimeter to the center forming a constantly curved gradually rounding brush tip corresponding approximately to the curvature of the human cuticle, whereby, through the rotationally symmetric arrangement of the brush hairs, the same curvature

is maintained independent of the angle of rotation, and characterized in that all the polish absorbed by the brush tip from the nail polish bottle can be utilized by turning the brush about its longitudinal axis, without the brush tip taking on a different contour, whereby the entire surface of the fingernail up to its edge can be polished.

4,454,623
TOOTHBRUSH

James O'Halloran, Tortola, British Virgin Isls., assignor to Radius Corporation, New York, N.Y.

Filed Sep. 8, 1982, Ser. No. 406,216
Int. Cl.³ A46B 9/04
U.S. Cl. 15—167 R **16 Claims**



1. In a toothbrush comprising (1) a handgrip formed on one side with a substantially plane fingerrest and a concave thumbrest and on an adjacent side with a palmrest including a convex portion spaced apart from said thumbrest and a substantially linear portion adjacent to said thumbrest, (2) a neck connected to said handgrip, and (3) a head connected to said neck, said head being formed with a substantially plane bristle-supporting surface and including bristles extending outward from said bristle-supporting surface, the improvement wherein

said neck has an axis that is angularly displaced with respect to an extension of said linear palmrest portion through an acute neck angle and

said bristle-supporting surface is angularly displaced with respect to said neck axis through an acute crank angle and with respect to the plane of said fingerrest surface through an acute rotation angle.

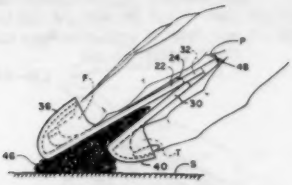
4,454,624
SCOURING PAD HOLDER

Barbara B. Vandermer, 12128 Carroll Mill Rd., Ellicott City, Md. 21043

Filed Aug. 26, 1982, Ser. No. 411,661
Int. Cl.³ A47L 13/07
U.S. Cl. 15—209 D **1 Claim**

1. In a holder (10) for protecting parts of the thumb and fingers of a user of a scouring pad held between a respective finger shielding out-turned portion and a thumb shielding out-turned portion, of the holder, and means resiliently aligning and biasing the finger shielding out-turned portion and the thumb-shielding out-turned portion for holding a said scouring pad, the improvement comprising: the finger shielding out-

turned portion being a rigid, first hood (36) extending rearwardly, having an open rear (38) and proportioned for substantially enclosing the respective terminal joints of the user's fingers; the thumb shielding out-turned portion being a rigid second hood (40) extending rearwardly, having an open rear (44) and proportioned for substantially enclosing the terminal joint of the user's thumb; said means resiliently aligning and biasing being planar and including: a first arm (22) extending



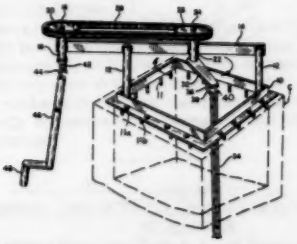
rearwardly from a first side of the rigid first hood (36) and then returning forwardly, as an inward arm portion (30), to said rigid second hood (40), a second arm (24) extending rearwardly from a second side of the rigid first hood (36) in spaced relation with the first arm (22); said inward arm portion (30) substantially filling the space between and guiding on said first arm (22) and second arm (24) for pinching a said scouring pad upwardly against said first arm and second arm.

4,454,625

CHIMNEY CLEANING APPARATUS

Ernest J. Kern, 319 SE. 98th Ave., Vancouver, Wash. 98664

Filed May 24, 1982, Ser. No. 381,214
Int. Cl.³ F23J 3/00
U.S. Cl. 15—249 7 Claims



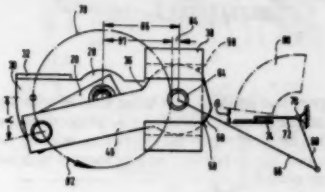
1. Chimney cleaning apparatus comprising
(a) a base frame arranged to be secured to the top of a chimney,
(b) a support arm on said frame arranged to be disposed over the top of the chimney opening,
(c) a crank on said support arm,
(d) drive means for rotating said crank,
(e) an elongated flexible member secured to said crank and arranged to hang down inside a chimney whereby upon turning said crank said flexible member swings around inside the chimney to knock off any substance which may have collected on the inner surface of the chimney,
(f) and operating means for said drive means arranged to manually control the operation of said drive means from a point remote from the chimney supported apparatus.

4,454,626

WIPING ARRANGEMENT FOR WINDOWS OF POWER VEHICLES

Lothar Schmidt; Horst Selbicke, both of Buehl-Altschweier, and Eckhard Ursel, Buehl, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 15, 1982, Ser. No. 441,796
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1981, 3146022; Aug. 18, 1982, 3230695
Int. Cl.³ B60S 1/26
U.S. Cl. 15—250.16 39 Claims



1. A wiping arrangement for windows of power vehicles, comprising
a wiping element with a wiper shaft;
rotary direction reversible drive means having a rotatable driven element;
swinging drive means having a driving element rotatable about a center and provided with a gripping element and a guide, said swinging drive means connecting said driven element of said rotary drive means with said wiper shaft of said wiping element so that when said driven element rotates in one direction said wiping element covers a circular, segment-shaped wiping field and performs wiping step over the wiping field, and when said driven element rotates in a reverse direction said gripping element arranged on said driving element of said swinging drive means moves radially away from said center with the aid of said guide and thereby said wiping element is transported to a parking position lying beyond the wiping field;
a structural element connected and rotating together with said gripping element during the wiping step, but uncoupled from said gripping element for the radial movement of the latter, said structural element being provided with blocking means for blocking said structural element in position of the rotary direction reverse, and with guiding means arranged on said structural element.

4,454,627

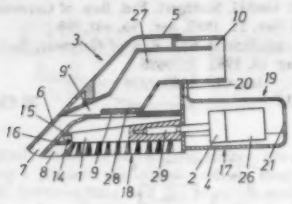
DEVICE FOR CLEANING TEXTILE SURFACES

Hans-Peter Simm, Wuppertal; Wieland Glihse, Remscheid; Christoph Hoosch, Essen, and Renate Friedrichs, Wuppertal, all of Fed. Rep. of Germany, assignors to Vorwerk & Co. Interbolding GmbH, Wuppertal, Fed. Rep. of Germany

Filed Nov. 16, 1981, Ser. No. 321,896
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1980, 3045392
Int. Cl.³ A47L 5/26
U.S. Cl. 15—377 4 Claims

1. In a device for cleaning textile surfaces operable in conjunction with a vacumm cleaner, a combination comprising an electrically driven working tool; an electromotor having an output shaft connected to said working tool to provide for oscillating pivotal movement of the working tool relative to a surface to be cleaned and a housing including a drive motor casing, a nozzle casing and an air-duct casing, said nozzle casing being formed with a first nozzle and a second nozzle, said second nozzle accommodating said working tool, said air-duct casing including a connection element having a suction duct connectable to the inlet of the vacuum cleaner fan, said nozzle casing being formed with a first suction channel

communicating with said first nozzle and a second suction channel communicating with said second nozzle, said first suction channel and said second suction channel being selectively open into said suction duct, and said connection element



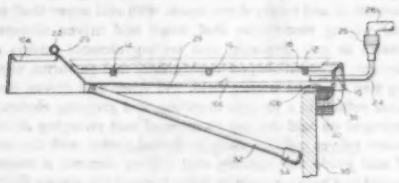
being a grip, said working tool being formed with a projecting tip, said nozzle housing including two projections spaced from each other to form a gap therebetween, said tip being positioned in said gap to provide an axis about which said pivotal movement occurs.

4,454,628

TABLE FOR USE IN CLEANING FISH

Duane G. Olson, Omro, Wis., assignor to Boson Table Company, Waukesha, Wis.

Filed Jul. 1, 1982, Ser. No. 394,155
Int. Cl.³ A22C *25/06*
U.S. Cl. 17—44 **7 Claims**



1. A table for cleaning fish, and for connection to a sink having a faucet and a drain, comprising:

a rectangular body, the floor on the inside of which slopes downward from a higher end to a lower end, and having a drain opening at the lower end;

means for attaching said body to the sink such that the drain opening is positioned over the sink;

a plurality of slats suspended lengthwise above the floor of said body, by resting on crossmembers which in turn rest on said body; and

means for spraying water onto said slats,

such that when the fish is cleaned on said slats, the waste material drains down between said slats and into the drain opening of said body, and the slats are continuously washed by the water from said spraying means.

4,454,629

APPARATUS FOR REMOVING AN ANIMAL FROM A SHELL

Arthur C. Carpenter, c/o V. F. Kiessling, 163 Collins St., Melbourne, Victoria 3000, Australia

Filed Nov. 3, 1982, Ser. No. 438,976
Claims priority, application Australia, Nov. 10, 1981, PF 1491
Int. Cl.³ A22C *29/00*
U.S. Cl. 17—51 **8 Claims**

1. An apparatus for removing an animal from a shell, said apparatus comprising a tubular substantially helical main portion having an inlet for ingress of fluid into the interior of said main portion and an outlet adjacent one end of said main portion for egress of fluid from the interior of said main portion and an attachment portion for coupling the apparatus to a source of high pressure fluid.

7. A method of removing an animal from a shell comprising: inserting one end of a helical, tubular tool having a fluid inlet and a fluid outlet into the shell, causing relative rotary motion

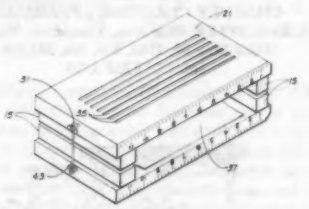
between the shell and the apparatus to position said one end interiorly of the shell and adjacent the apex thereof and injecting high pressure fluid into said apparatus whereby the fluid may escape from said outlet and may urge the animal out from the shell.

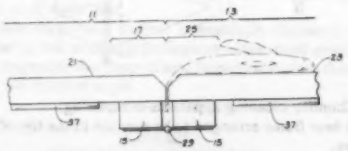
4,454,630

FISH CLEANING DEVICE

Charles E. Shouldis, MV Western Pacific, c/o Van Camp Samoa, Pago Pago, Tutulia, American Samoa 96799

Filed Aug. 19, 1982, Ser. No. 409,460
Int. Cl.³ A22C *25/06*
U.S. Cl. 17—70 **11 Claims**





1. A fish cleaning device comprising:

a first frame member having thereon a first cleaning surface and having a first end and a second end opposite said first end;

a second frame member having thereon a second cleaning surface and having a first end and a second end opposite said first end; and

hinge means for connecting said first frame member to said second frame member in a folding relationship with respect to each other such that each of said first ends of said first and second frame members are urged to an adjoining position for capturing a fish therebetween and thereby

holding a fish in a cleaning position on a selected one of said first or second cleaning surfaces when said first frame member and said second frame member are unfolded and disposed on a flat surface.

4,454,631

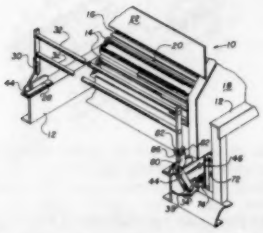
IMPROVED SAFETY BAR CUTOFF AND BRAKE METHOD

Robert C. Schwartz, Lubbock, Tex., assignor to Horn and Gladden Lint Cleaner Co., Inc., Lubbock, Tex.

Division of Ser. No. 310,109, Oct. 9, 1981, Pat. No. 4,416,035. This application May 18, 1983, Ser. No. 495,675

Int. Cl.³ D01G *31/00*

U.S. Cl. 19—0.2 **2 Claims**



1. The process involving a machine, said machine having:
a. a frame having two sides,
b. a cylinder journaled to the frame revolving at high speed,
c. a plurality of rollers revolving at a lower speed than the cylinder journaled to the frame,
d. a roller electric motor for revolving the rollers on the frame,
e. transmission means connecting the rollers and roller motor,
f. a cylinder motor connected to the cylinder,
g. a housing on the frame over the cylinder and rollers, and,
h. an opening in the housing over the rollers;
wherein the improved method comprises:
i. placing bars extending across the machine at the opening,
j. holding a trip plate in a run position by a sear on an arm holding the bars,
k. snapping the trip plate to a stop position by a spring when the sear is moved by a workman pushing on the bars,
l. stopping the roller electric motor responsive to snapping the trip plate to the stop position, and
m. mechanically braking the transmission means mechanically responsive to snapping the trip plate to the stop position.

4,454,632

SHIPPING AND INSTALLATION STRAP FOR LINEAR ACTUATOR

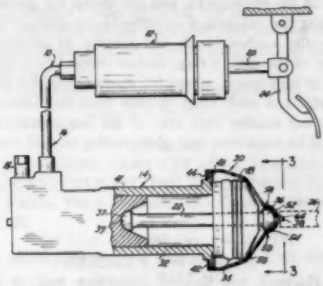
Richard Nix, Utica, and Keith V. Leigh-Monstevens, Troy, both of Mich., assignors to Automotive Products plc, United Kingdom

Filed Feb. 1, 1982, Ser. No. 344,495

Int. Cl.³ B65D *63/00*; B60T *11/30*

U.S. Cl. 24—16 PB **19 Claims**

1. A shipping and installation restraining strap for a hydraulic actuator for operating a motor vehicle clutch, said hydraulic actuator forming part of an apparatus comprising a master cylinder, said hydraulic actuator and a conduit connecting said master cylinder and said hydraulic actuator, said master cylinder, conduit and hydraulic actuator being prefilled with hydraulic fluid prior to installation on a motor vehicle, said hydraulic actuator having a housing and a linearly movable output member projecting from said housing, wherein said linearly movable output member has an end connectable to an operating member of a motor vehicle clutch and said strap holds said output member in a retracted position until after installation of said hydraulic actuator on said motor vehicle, said strap comprising a retaining member having a configuration which is different from said strap and engages the end of said output member, a strip having an end attached to said retaining member, and means attaching the other end of said strip to a non-movable portion of the housing of said actuator,



said strip being disposed substantially on the exterior of said housing, said strip having a portion of reduced strength between the ends of said strip whereby said strip is ruptured at said portions of reduced strength upon first operation of said motor vehicle clutch after installation of said prefilled master cylinder, conduit and hydraulic actuator on said motor vehicle.

4,454,633

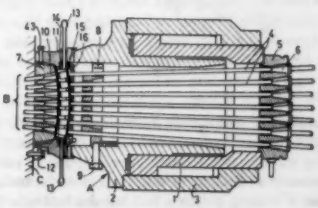
APPARATUS FOR RELEASING PRE-STRESS CABLE GRIPPING MEANS WHEN SAID CABLE IS BEING DETENSIONED

Carlos de la Fuente, Nanterre, and Bernard Amelot, Epernon, both of France, assignors to Freyssinet International (STUP), Boulogne-Billancourt, France

Filed Jun. 7, 1982, Ser. No. 385,680

Int. Cl.³ F16G *11/00*; E04C *3/26*

U.S. Cl. 24—115 R **3 Claims**



1. In an apparatus for gripping and holding at least one truncated group of gripping means surrounding a strand of a pre-stress cable under tension, and anchoring this strand in a truncated opening in an anchor block, said apparatus being disposed between said block and an annular tensioning jack through which this cable passes in order to detension this tensioned strand, in which apparatus each of the gripping means of the group comprises, towards the outside of the block, an extension which, in the anchored state of the strand, extends outwardly therefrom and is terminated by a hooking flange, said apparatus comprising, for each group of gripping means, an extractor fitted on the strand, which is formed by radially elastic longitudinal resilient parts, substantially parallel to the strand and distributed circumferentially therearound, these resilient parts comprising at their ends inwardly turned

hooking projections, the smallest circumference determined by all the inner edges of these projections, in the state of rest of the extractor, being of smaller diameter than that of the volume formed by the outer surface of the extensions of the gripping means near their hooking flange, in the anchored state of the strand, said apparatus further comprising means for displacing and maintaining these extractors in the longitudinal direction of the strand, the extractors comprising a flange on the side opposite of the projections, and the means for displacing and maintaining the extractors comprising an annular block surrounding the anchor block and serving as support for the periphery of the jack, a ring, mobile inside this block in rotation and in translation, means for manuvering this ring, and a plate perforated with holes greater than the diameter of an extractor but smaller than that of the flange traversed by a strand and its extractor, said plate resting on said mobile ring.

4,454,634

SAFETY BELT BUCKLE

Lennart Haglund, and Sigvard Johansson, both of Vårgårda, Sweden, assignors to AB Stil-Industri, Vargarda, Sweden

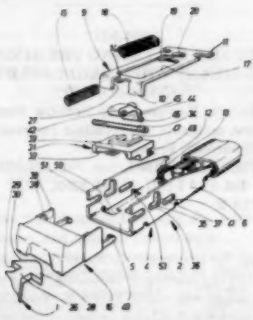
PCT No. PCT/SE81/00178, 371 Date Feb. 10, 1982, 102(e) Date Feb. 10, 1982, PCT Pub. No. WO81/03603, PCT Pub. Date Dec. 24, 1981

PCT Filed Jun. 15, 1981, Ser. No. 355,557

Claims priority, application Sweden, Jun. 16, 1980, 8004462

Int. Cl.³ A44B *11/25*

U.S. Cl. 24—636 **3 Claims**



1. Buckle for safety belts including a lockable buckle part and a locking buckle part, the locking buckle part comprising a locking member pivoted in the locking buckle part for movement between a releasing position releasing the lockable buckle part, and a locking position locking the lockable buckle part, the locking member being spring-biased to the releasing position thereof; a detent member movable between a latching position to retain the locking member in the locking position thereof, and a releasing position to allow the movement of the locking member to the releasing position thereof; a spring-biased ejector for ejecting the lockable buckle part when the locking member is moved to the releasing position thereof, said ejector being arranged to be moved by the lockable buckle part so as to move the detent member from the releasing position to the latching position thereof; and a pivoted linking arm pivotally connected at one end to the detent member and pivotally connected at the other end to the ejector and biased by a spring attached to the linking arm and is arranged to bring the detent member, to the latching position thereof upon connection of the lockable buckle part with the locking buckle part and to the releasing position upon movement of the detent member from the latching position thereof.

4,454,635

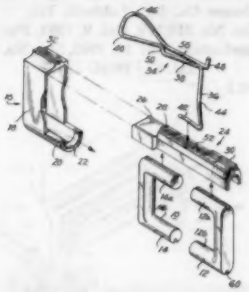
HOLDER FOR RELEASABLY SECURING A FERRITE CORE OR THE LIKE TO AN ELECTRICAL POWER LINE

Taft B. Russell, Edison, N.J., assignor to Edison Control Corporation, Metuchen, N.J.

Filed Oct. 19, 1982, Ser. No. 435,251

Int. Cl.³ H01R *25/00*; A44B *13/00*

U.S. Cl. 24—462 **11 Claims**



1. A holder for receiving a bifurcated ferrite core or the like and releasably securing same to an electrical power line, said bifurcated ferrite core having two substantially U-shaped portions abuttable to form a closed loop, said holder comprising: a boat having an interior configuration that is complementary to one U-shaped portion of said bifurcated ferrite core to receive and hold said one portion, said boat being substantially L-shaped; a gantry parallel to one leg of said boat and coupled to the other leg for receiving both said one and the other U-shaped portions, said gantry having an interior configuration that is complementary to one leg of each U-shaped portion and being of a dimension sufficiently long to permit said U-shaped portions both to be received thereby yet be spaced apart from each other, said gantry having a guide groove provided on the exterior thereof; and a substantially L-shaped bale formed of resilient material, one leg of said bale extending over the base of said other U-shaped portion of said ferrite core and the other leg of said bale having at least a portion that is received by and rides in said groove on said gantry, said other leg having an end that terminates in a handle portion to be gripped and driven so as to move said other U-shaped portion guided in said gantry to abut against said one U-shaped portion and thereby encompass said power line, said handle portion being driven in the opposite direction to separate said U-shaped portions and thereby release said ferrite core from said power line, said handle portion having a locking ear and said gantry having a locking slot cooperable with said locking ear to releasably receive said locking ear, whereby said bale clamps said U-shaped portions together.

4,454,636

SPRING FASTENER CLIP FOR WOODEN FURNITURE RAILS

Kenneth C. Pearson, Glenview, Ill., assignor to Hartco Company, Skokie, Ill.

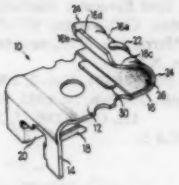
Filed May 17, 1982, Ser. No. 378,875

Int. Cl.³ A47C *23/00*

U.S. Cl. 24—347 **1 Claim**

1. A fastener clip for securing an end of an upholstery spring to a wooden rail of the framework of an article of furniture, comprising: a base portion adapted to overlie and be completely supported on the upper surface of a wooden rail of the framework of an article of furniture, a rail-engaging leg portion integrally joined to one end only of the base portion, said leg portion having integral anchoring means adapted to be embedded in the wooden rail for securing the fastener clip on

the wooden rail, a reentrant portion integrally joined to the other end of the base portion for receiving an end of an upholstery spring and being adapted to be wrapped thereover, said reentrant portion being supported on the upper surface of said wooden rail and the base portion by a distance slightly greater than the diameter of the end of an upholstery spring to be received in the reentrant portion, said reverse curved section having and integral transverse lip which extends upwardly and outwardly at an angle approaching a right angle along its line of juncture with said reverse curved portion said transverse lip providing an impact receiving surface for enabling the reverse curved section of the reentrant portion to be wrapped on an



end of an upholstery spring by a hand-held or automatic impacting tool, and cooperating upholstery spring end retaining means provided on the base portion and the reversed curved section of the reentrant portion of the clip, said spring end retaining means including elongated transverse inwardly extending detents positioned in spaced, substantially opposed relation to one another, and adapted, when the reverse curved section of the reentrant portion is wrapped over an end of an upholstery spring, to be positioned in substantially abutting or near abutting relation thereby acting to both lock the end of an upholstery spring on the clip and to resist any forces which may tend to dislodge the end of an upholstery spring from the reentrant portion of the clip.

4,454,637

METHOD FOR PRODUCING VELOUR NEEDLEFELT WEBS

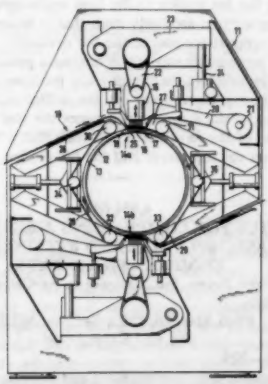
Richard Dilo, Eberbach, Fed. Rep. of Germany, assignor to Oskar Dilo Maschinenfabrik KG., Fed. Rep. of Germany

Division of Ser. No. 108,041, Dec. 28, 1979, Pat. No. 4,378,618. This application Apr. 21, 1982, Ser. No. 370,459

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1979, 2900935

Int. Cl.³ D04H *11/08*

U.S. Cl. 28—110 **6 Claims**



1. A method of producing a velour needlefelt web comprising:

superimposing a plurality of fiberfelt strips in staggered fashion so that at least a longitudinal edge area of each strip remains exposed from an overlying strip, to form a fiber fleece band having a transverse width;

helically winding said band about an axis to form a tube which develops along the axis, with said band at least partly overlapping itself in an overlapping area with each helical winding, said tube rotating about the axis;

binding at least inner fiber fleece strips of said tube by a selected width in said overlapping area using a plurality of felting needles extending along the axis;

forming pile loops in said tube after said binding using fork needles moving from an outer to an inner fiber fleece strip of said tube; and

axially cutting said tube to form a material web.

4,454,638

SPECIAL LATHE, PARTICULARLY FOR MAKING SETTINGS EXACTLY FITTING THE GEM OR THE LIKE

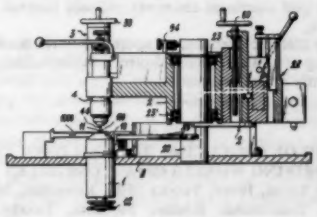
Stanoppi Emilio, Via 5 Giornate, 19 - Cassano Magnago (Varese), Italy

Filed Mar. 30, 1981, Ser. No. 248,853

Claims priority, application Italy, Apr. 11, 1980, 83619/80

Int. Cl.³ B23P *5/00*

U.S. Cl. 29—10 **2 Claims**



1. A lathe for making circular settings for stones or gems consisting of a frame, a rotating spindle having a vertically oriented rotating axis for carrying the workpiece in which the setting is to be made and a rotating turret proviced with a plurality of tool-carrying heads having tools carried therein, a flange provided with a cam and a plurality of one-way catches, disposed on said frame adapted to cooperate with said spindle and bring said tool-carrying heads into the vicinity of the vertical axis thereof when said turret is rotated and shape a setting in said workpiece carried by said spindle, a guage vice located on said frame for holding a stone or gem for which the setting is to be made and which gauge vice includes a piston element provided with an inclined plane at one end and a brake element near the opposite end acting thereon to clamp said piston in place when said stone or gem diameter has been detected by said guage vice, the inclined plane of said piston element contacting said one-way catches on said cam and adjusting the angular positioning of a tool in a tool-carrying head in the vicinity of the vertical axis of said spindle.

4,454,639

METHOD FOR TUNING PIEZOELECTRIC RESONATORS

Lawrence N. Dworsky, Northbrook, Ill.; Douglas H. Weisman, North Lauderdale, and Loi Q. Ninh, Lauderhill, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 3, 1982, Ser. No. 384,827

Int. Cl.³ H01L *41/22*

U.S. Cl. 29—25.35 **8 Claims**

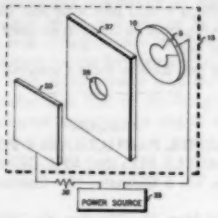
1. A method of adjusting the frequency of a piezoelectric resonator device having an aluminum electrode, comprising the steps of:

oxidizing the surface of said aluminum electrode to form an aluminum oxide layer;

mass loading said aluminum electrode by applying rapidly sputterable material to said aluminum oxide layer;

placing said resonator device within an enclosure, said enclosure having an internal metallic surface which is electrically accessible from outside of said enclosure;

providing an atmospheric environment suitable for supporting an electrical glow discharge within said enclosure;



sealing said enclosure permanently; and

applying an electrical potential appropriate for establishing an electrical glow discharge within said enclosure between said aluminum electrode and said internal metallic surface,

whereby metallic particles are sputtered to reduce the mass loading of said aluminum electrode while inside said permanently sealed enclosure.

4,454,640

METHOD OF PRODUCING BEARING DEVICES FOR DRIVING WHEELS OF AUTOMOBILES

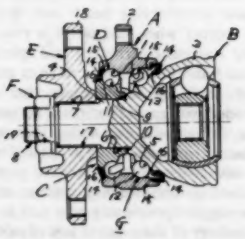
Tomoyoshi Egusa, Iwata; Yutaka Miki, Kawanishi; Masayuki Kuroda, Takarazuka; Koshiro Fujimoto, Takatsuki, and Motoharu Niki, Akaiwa, all of Japan, assignors to NTN Toyo Bearing Co., Ltd., Osaka, Japan

PCT No. PCT/JP82/00007, 371 Date Sep. 13, 1982, 102(e) Date Sep. 13, 1982, PCT Pub. No. WO83/02484, PCT Pub. Date Jul. 21, 1983

PCT Filed Jan. 12, 1982, Ser. No. 420,250

Int. Cl.³ B21D *53/10*

U.S. Cl. 29—148.4 A **3 Claims**



1. A method of manufacturing bearing assembly for the driven wheels of automobiles, which bearing assembly comprises an outer member having two rows of raceway surfaces formed on the inner periphery thereof, the outer joint member of a constant velocity joint having a raceway surface formed on the outer periphery thereof, an inner annular member having another raceway surface formed on the outer periphery thereof, and two rows of rolling elements interposed between the raceway surfaces of said outer member, outer joint member, and inner annular member, said outer joint member being formed with a cylindrical seat on which said inner annular member is fitted, with said inner annular member axially abutting against a shoulder surface formed at one end of the cylindrical seat, said method being characterized by the steps of of grinding at least said raceway surface of the outer joint member, said cylindrical seat surface, and said shoulder surface simultaneously by a grinding wheel, grinding at least said raceway surface of the inner annular member and its one end surface which abuts against the shoulder surface simultaneously by a grinding wheel, and fitting said inner annular member on the cylindrical seat of the outer joint member until it abuts against the shoulder surface.

4,454,641

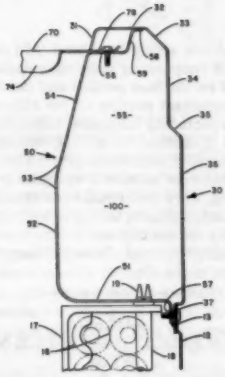
METHOD OF ASSEMBLING A HEATING EXCHANGER

Rudy E. Haas, East Syracuse; Michael E. Smorol, Syracuse; Curtis L. Tobin, Chittenango, all of N.Y., and James J. Walker, Jr., Merrimack, N.H., assignors to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 202,981, Nov. 3, 1980, Pat. No. 4,390,059. This application Feb. 14, 1983, Ser. No. 466,181

Int. Cl.³ B23P *15/26*

U.S. Cl. 29—157.3 R **4 Claims**



1. A method of manufacturing a heat exchange unit having a heat exchanger assembly supported by a base pan which comprises:

forming an annular fan orifice having a U-shaped cross section including a grille support portion and a top cover support portion;

securing the fan orifice to the heat exchanger assembly;

mounting a grille assembly such that it is supported by the grille support portion of the fan orifice;

forming an annular top cover having a generally L-shaped cross section and including a top portion; and

sliding the top cover over the fan orifice such that the top portion of the top cover engages the top cover support portion of the fan orifice and such that a void is defined between the top cover and the fan orifice.

4,454,642

APPARATUS FOR COMPRESSING A RETAINER RING TO ASSEMBLY SIZE AND RETAINER RING COMPRESSED THEREBY

Deryll Liechty, Berne, Ind., assignor to Ex-Cell-O Corporation, Troy, Mich.

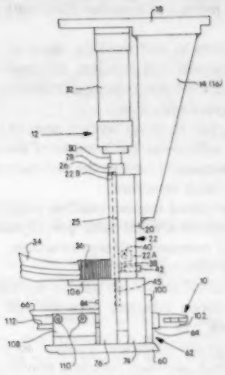
Filed Mar. 26, 1982, Ser. No. 362,203

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—229 **15 Claims**

1. An apparatus for compressing and holding a retainer ring having spaced apart lugs at reduced assembly size, comprising a compressing means for compressing the retainer ring exteriorly thereof and mandrel means disposed in the compressing means and around which the retainer ring is compressed to

assembly size, said mandrel means having lug-retaining groove means including opposing spaced apart sides to receive and retain the retainer ring lugs therebetween and into which the retainer ring lugs are compressed and retained interiorly of the ring to hold the ring at compressed assembly size on said mandrel means, said mandrel means including a portion extending from the compressing means to an assembly location and wherein the apparatus further comprises means for moving the compressed retainer ring to the assembly location on said mandrel means, the ring being maintained at the compressed assembly size on said mandrel means by the lugs being retained in said lug-retaining means without the need for external ring containment.

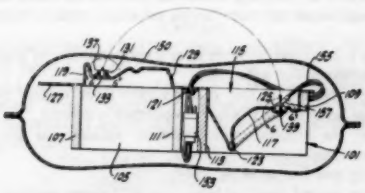


4,454,643

COMBINATION MEMBRANING TOOL, PACKAGE AND CALIBRATION UNIT FOR EYELID SENSOR OR THE LIKE

David E. Downie, Lafayette; Gary Schneiderman; Eric D. Shulse, both of Walnut Creek, and Stanley J. Withers, Oakland, all of Calif., assignors to Thoratec Laboratories Corporation, Berkeley, Calif.

Filed Apr. 20, 1981, Ser. No. 255,682
Int. Cl.³ B25B *27/14*
U.S. Cl. 29—270 **10 Claims**



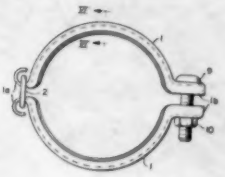
1. Apparatus for applying a membrane across the end of a stud comprising a receptacle including a seat for receiving and holding the stud in a fixed position, a cover disposed for movement toward and away from said seat, said cover defining an opening alignment with said seat, the portion of said cover surrounding said opening defining ring engaging and pushing means, a pin disposed in and extending out of said opening, means for yieldingly restraining said pin in said opening against axial movement, said pin having a cross section substantially the same as that of the stud and being adapted to receive and frictionally engage a keeper ring about that portion thereof extending out of said opening, and means for urging said cover toward said seat until the movement of said pin is arrested by the stud in the seat such that it is forced further into said opening overcoming said means for yieldingly restraining said pin and the keeper ring is forced off the pin and onto the stud by the continued movement of the cover thereby positioning and capturing the membrane about the stud.

4,454,644

METHOD OF MAKING A CLAMP

Yoichiro Okazaki, Sagamihara, and Shigeaki Akazawa, Isehara, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha and The Yokohama Rubber Co., Ltd., both of Tokyo, Japan

Filed Nov. 22, 1982, Ser. No. 443,650
Claims priority, application Japan, Nov. 26, 1981, 56-188399
Int. Cl.³ B23P *11/00*
U.S. Cl. 29—440 **3 Claims**



1. A method of making a clamp, comprising the steps of:
cutting out an unworked half of the clamp from a metal plate material with a press machine,
forming the unworked half such that it is semicircular in shape when viewed from the front and the opposite ends thereof extend outwardly along an imaginary line, which passes through the center of the semicircle and the vicinities of the opposite ends, and that the other portions except for one end thereof can have a cross section like a gutter,
cutting out an unworked closed link from a metal plate material and then applying a compressive force to the unworked link to correct the plane strain in it and to harden the link,
making the other half of the clamp in the same manner,
arranging the halves of the clamp substantially in circle,
fitting said link onto said one end of each of the halves of the clamp, and
curling said one ends of the halves around the fitted link, whereby the halves are interlockingly assembled in a pivotable relationship via the link.

4,454,645

MULTIPLE STATION DRILLING APPARATUS

Brian D. Schissler, Springfield, Ohio, assignor to The O. S. Kelly Company, Springfield, Ohio

Filed Feb. 3, 1982, Ser. No. 345,503
Int. Cl.³ B23Q *39/04*
U.S. Cl. 29—563 **7 Claims**

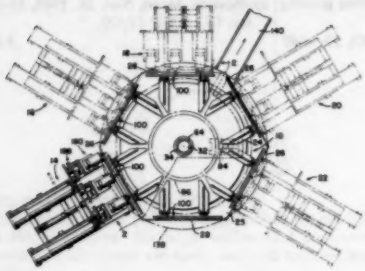
1. A machine for performing a large number of repetitive but variable machining operations on plate-like workpieces, comprising:
a turntable having a periphery and a plurality of workpiece holding fixtures distributed in spaced relation around said periphery;
a plurality of tool supports mounted around and outward of said periphery in relation correlated to the spacing of said fixtures and providing a sequence of machine stations;
at least one station for loading and unloading also located around and outward of the periphery of said turntable and at which a machined workpiece is removed from one of said fixtures positioned at said loading and unloading station, and a clean cast workpiece loaded to said one fixture positioned at said loading and unloading station;

at least one machining tool associated with each of said tool supports;

drive means connected to rotate said turntable in indexed fashion bringing a workpiece in said fixtures successively to stations aligned with said tool supports;

at least one X-Y positioner mounted on each of said supports, each of said positioners carrying an associated one of said machining tools and being drivable to preselected locations on a workpiece being held in an adjacent one of said fixtures;

means for reciprocating said machining tools with respect to a workpiece;



means for actuating said positioners while said machining tools are withdrawn from a workpiece;

means supporting each of said tool supports for radial movement relative to said turntable such that said machining tools may be retracted away from said turntable to provide clearance for a fixture supported thereon to be rotated past said machining tools, or advanced toward said turntable to bring said machining tools into close proximity to an associated workpiece to enable said tools to operate thereon; and

a control coordinating the motions of said turntable, said reciprocating means, said X-Y positioners and said supporting means.

4,454,646

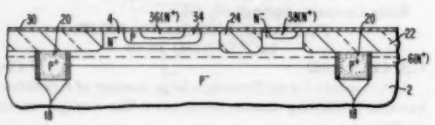
ISOLATION FOR HIGH DENSITY INTEGRATED CIRCUITS

Richard C. Joy, Beacon; Bernard M. Kemlage, Kingston, both of N.Y., and John L. Mauer, IV, South Kent, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 27, 1981, Ser. No. 296,929

Int. Cl.³ H01L *21/76*

U.S. Cl. 29—576 W **10 Claims**



1. Method for forming a recessed isolation structure for an integrated circuit structure having substrate contacts comprising:

forming a pattern of trenches having substantially vertical sidewalls in a monocrystalline silicon substrate in all areas where said isolation structure and said substrate contacts are desired by an etching procedure through an appropriate mask;

forming an insulating layer upon the surfaces of said trenches;

removing said insulating layer from the bottom surfaces of said trenches;

depositing a layer of doped polycrystalline silicon over said substrate to fill said trenches;

planarizing said substrate by an etching process which substantially removes said layer of polycrystalline silicon except from said trenches;

forming a masking layer over the said substrate surface having said pattern of trenches filled with polycrystalline silicon;

opening a pattern in said masking layer to the said silicon substrate wherein said isolation structure is desired and which is in at least part over said pattern of trenches filled with polycrystalline silicon;

said pattern in said masking layer is open to the said pattern of trenches except for the portion of the said pattern of trenches designated to act as the substrate contacts of said integrated circuit structure;

oxidizing the exposed monocrystalline substrate having said pattern of trenches filled with polycrystalline silicon to produce said recessed isolation structure;

removing said masking layer;

forming the desired active and passive devices in said monocrystalline silicon substrate between said recessed isolation structure; and

making appropriate electrical contact to said active and passive devices, and said substrate contacts.

4,454,647

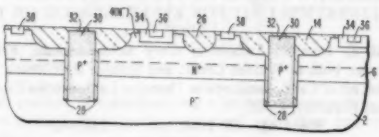
ISOLATION FOR HIGH DENSITY INTEGRATED CIRCUITS

Richard C. Joy, Beacon; Bernard M. Kemlage, Kingston, both of N.Y., and John L. Mauer, IV, South Kent, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 27, 1981, Ser. No. 296,933

Int. Cl.³ H01L *21/76*

U.S. Cl. 29—576 W **11 Claims**



1. Method for forming a recessed isolation structure for an integrated circuit structure having substrate contacts comprising:

forming a first masking layer over a major surface of a monocrystalline silicon substrate;

opening a pattern in said first masking layer to said major surface wherein said isolation structure is desired;

oxidizing the exposed monocrystalline substrate to produce said recessed isolation structure;

removing said first masking layer;

forming a second masking layer over said major surface;

opening a pattern in said second masking layer in the recessed isolation structure wherein said substrate contacts are to be formed;

forming through said opening a pattern of trenches having substantially vertical sidewalls through the said recessed isolation structure and into the said monocrystalline silicon thereunder;

forming an insulating layer upon the surfaces of said trenches;

removing said insulating layer from the bottom surfaces of said trenches;

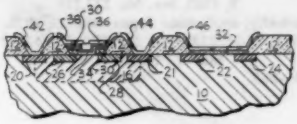
depositing a layer of polycrystalline silicon over said substrate to fill said trenches; and

planarizing said major surface of said substrate by an etching process which substantially removes said layer of polycrystalline silicon except from said trenches.

4,454,648
METHOD OF MAKING INTEGRATED MNOS AND CMOS DEVICES IN A BULK SILICON WAFER

Yukun Hsia, Santa Ana, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Mar. 8, 1982, Ser. No. 356,082
Int. Cl.³ H01L *29/78, 21/265;* **B01J** *17/00*
U.S. Cl. 29—576 B **20 Claims**



1. An MNOS/CMOS transistor fabrication process comprising:

forming at least one well of a first conductivity type in a semiconductor wafer of a second conductivity type by ion implantation; then,

depositing doping materials of the first and second conductivity types into respective preselected regions of the surface of the wafer wherein such regions will comprise source, drain, and contact regions of opposite conductivity type to the implanted ions of this step; then,

implanting ions of the first and second conductivity types into preselected fields intermediate certain of the preselected regions; then,

forming a field oxide layer over substantially all of the surface of the wafer; then,

exposing preselected gate regions on the surface of the substrate and covering these gate regions with a gate oxide layer; then,

implanting ions of the first conductivity type into those gate regions which have been preselected as MNOS transistor gate regions; then,

exposing at least a portion of the surface of the substrate in the MNOS transistor gate regions and then covering the gate regions with first a memory oxide layer and then a silicon nitride layer; then,

exposing preselected contact areas on the surface of the substrate; and then,

forming electrical interconnects and contacts with the contact areas and the gate regions.

4,454,649
CHROMIUM ELECTRODES FOR REDOX CELLS

Vinod Jalan, Concord, Mass.; Margaret A. Reid, Bay Village, and Jo Ann Charleston, Lorain, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 26, 1982, Ser. No. 352,821
Int. Cl.³ C25B *11/04, 11/08*
U.S. Cl. 29—623.5 **21 Claims**

10. A method of making a REDOX cell of the type having an ion conductive membrane separating a container into two compartments, one of which contains an anode fluid having a chromic/chromous couple and the other of which contains a cathode fluid having a ferrous/ferric couple, and further including an inert electrically conductive electrode disposed in said anode fluid to develop a negative charge thereon, the method comprising the steps, in the following order, of:

soaking a carbon felt in methanol for at least 15 minutes;

rinsing said felt in water;

simmering said felt in a 30 to 50 volume percent KOH solution at a temperature of approximately 100° C. for 1 to 3 hours;

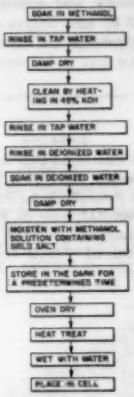
rinsing said felt in tap water;

soaking said felt in deionized water for at least 8 hours;

damp drying said felt;

moistening said felt with a methanol-water solution which is from 50 to 80 volume percent methanol and which has dissolved therein $HAuCl_3.3H_2O$ whereby the surface areas of said felt are coated with the gold-containing solution;

disposing said felt in a dark enclosure at a temperature of from 0° C. to 35° C. for 10 to 14 hours;



drying said felt at a temperature of from about 90° C. to 130° C.; and,

heat treating said felt at a temperature of from about 250° C. to 280° C. for a period of from about 2 hours to about 3 hours;

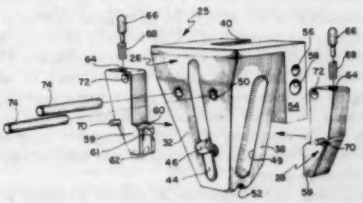
wetting said felt with deionized water; and,

disposing said felt in the anode fluid compartment of the REDOX cell to serve as a negative electrode.

4,454,650
UPPER JAW AND TOOL ASSEMBLY FOR FASTENER ATTACHING MACHINE

Bernard R. Silver, Cranston, R.I., assignor to U.S. Industries, Inc., New York, N.Y.

Filed Aug. 23, 1982, Ser. No. 410,867
Int. Cl.³ B23Q *7/10;* **B23P** *17/00, 11/00;* **A41H** *37/04*
U.S. Cl. 29—818 **10 Claims**



1. In a machine for assembling and attaching fastener components to a fabric and the like wherein the machine is of the type having upper and lower fastener tools, upper and lower feed assemblies which sequentially feed upper and lower component halves to said tools, respectively, and a guide plate for supporting said fabric and the like adjacent the upper end of said lower tool and wherein said upper tool reciprocates to effect sequential assembly of said upper and lower component halves with said fabric and the like therebetween, the invention comprising a stationary housing having a longitudinal passage

therethrough, a pair of finger members mounted in said housing for receiving successive upper halves from said upper feed assembly and releasably positioning same in said passage, and means on said upper tool for temporarily retaining an upper component half on the lower end thereof, said housing being mounted on said machine and dimensioned so that the lower end thereof is spaced slightly above said guide plate, said upper tool being reciprocal in said passage whereby as said upper tool moves downwardly, said retaining means engages the component half held by said fingers and advances it downwardly through said passage and into assembled engagement with said lower half.

4,454,651

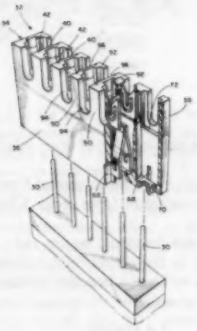
METHOD OF FABRICATING A WIRE HARNESS

Jack E. Caveney, Hinsdale, and Roy A. Moody, Flossmoor, both of Ill., assignors to Panduit Corp., Tinley Park, Ill.

Division of Ser. No. 909,732, May 25, 1978, Pat. No. 4,191,442. This application Oct. 25, 1979, Ser. No. 88,428

Int. Cl.³ H01R *43/04*

U.S. Cl. 29—861 **17 Claims**



1. A method of fabricating a wire harness comprising a plurality of connectors interconnected by wires; each of said connectors including an insulative housing having spaced cavities and further including metallic terminal elements, each having a wire terminating portion, preloaded into said cavities; said wire terminating portion having sections defining an open-ended wire-receiving slot of a width less than the diameter of the conductor in the wire to be terminated therein so that in response to the insertion of a wire laterally of its axis into said slot the insulation of said wire is removed effecting electrical termination of said wire in said element; each of said slots having an entrance; each of said connectors comprising holding means for firmly mechanically holding respective wires relative to the entrances of corresponding wire-receiving slots prior to their electrical termination, said method comprising the following steps:

positioning said connectors at desired locations at a first station;

running said wires in lengths dictated by the dimensions of the finished harness between predetermined terminal element locations at the connectors;

securing the various wires so that they are firmly mechanically held in the respective holding means associated with said predetermined terminal element locations prior to electrical termination of the wires; and

terminating the wires by inserting the various wires into their corresponding wire-receiving slots whereby said wire harness can be wired and terminated without the use of separate wire positioning jigs.

4,454,652

METHOD OF PROCESSING END PORTIONS OF COVERED WIRES

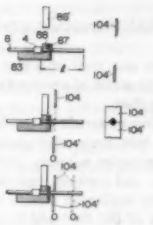
Yoshitsugu Suzuki, Mishima; Syogo Iizuka, Cotenba; Shigeo Kajiyama, Shizuoka; Kenji Usui, Gotenba, and Masahiro Kobayashi, Susono, all of Japan, assignors to Yazaki Corporation, Tokyo, Japan

Division of Ser. No. 80,682, Oct. 1, 1979. This application Jan. 8, 1981, Ser. No. 223,231

Claims priority, application Japan, Sep. 29, 1978, 53-120280; Nov. 20, 1978, 53-142212; Nov. 20, 1978, 53-142213

Int. Cl.³ H01R *43/04*

U.S. Cl. 29—863 **5 Claims**



1. A method of processing an end portion of each covered wire in a wire harness comprising the steps of:

(a) holding a covered wire of the wire harness at a predetermined position distant from one free end of the wire;

(b) nipping said wire from above and below by a pair of cutting edges on the free end side of said predetermined position;

(c) moving said pair of cutting edges away from said predetermined position towards said free end and stopping the movement at a first position;

(d) cutting an insulative covering of said covered wire by said pair of cutting edges;

(e) moving said pair of cutting edges further away from said predetermined position towards said free end and stopping the movement at a second position such that the insulative covering is removed from a conductor portion of the covered wire corresponding to the first position through the second position; and

(f) cutting the conductor portion of the covered wire by said pair of cutting edges at the second position.

4,454,653

BARBER-TYPE RAZOR

Evan N. Chen, Fairfield, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Jan. 25, 1982, Ser. No. 342,533

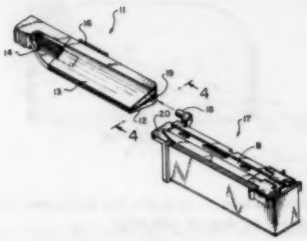
Int. Cl.³ B26B *21/10*

U.S. Cl. 30—53 **2 Claims**

1. A barber razor having a pair of hinged blade guides including lock means for actuating the guides to clamp a blade, the improvement comprising:

a first blade guide terminating in a handle, a second blade guide hinged to said first blade guide by means of axle or spindle means defining a single axis, said second blade guide being movable relative to said first blade guide along said axis, latch means defining a spring clip having a manual operating tab mounted upon said second guide cooperating with a notch formed in said first guide, said spindle means and its axis being disposed in a generally medial position relative to said guides to define within said

guides an upper operating section and a lower clamping section, said blade guides being formed with an injector socket for receiving a new blade, injector means for depositing a new blade into said clamping section, said lock means defining a jamming wedge carried by and movable



along said spindle means effective to pivot said second guide relative to said first guide to clamp said blade and used blade ejector means mounted on said spindle means and movable therealong operative to eject a spent blade from said guides.

4,454,654

NAVIGATIONAL ANGLE-MEASUREMENT DEVICE

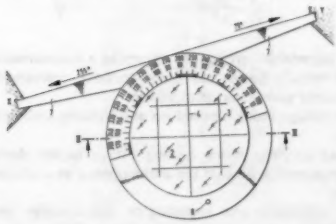
Hans G. Mayer, Telemannstr. 5, 2000 Hamburg 19, Fed. Rep. of Germany

Filed Nov. 9, 1982, Ser. No. 440,437

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1981, 8132933[U]

Int. Cl.³ G01C *1/00*; G01B *3/56*

U.S. Cl. 33—1 N **7 Claims**



1. A two-part navigational angle measurement device comprising a transparent circular disc having a coordinate grid thereon, an annular ring coaxially positioned about said circular disc, said circular disc being rotable within said annular ring, said annular ring having gradations around at least half of its circumference, a tangent ruler fixed to said annular ring, said tangent ruler having a tangent edge which is tangent to said annular ring at the mid-point of said gradations.

4,454,655

DRILL PIPE MEASURING TOOL

Jim E. Ellis, Houston, Tex., assignor to Hillard C. Van Zandt, Odessa, Tex.

Filed Mar. 18, 1982, Ser. No. 359,606

Int. Cl.³ G01B *3/12*

U.S. Cl. 33—141 G **14 Claims**

1. A distance measuring tool for measuring the length of a drill pipe within a well comprising housing means and measuring assembly means removably mountable as a unitary module within said housing means, said measuring assembly means including a unitary support, at least one measuring wheel rotatably mounted upon said support and extending outwardly beyond at least one peripheral edge of said support, distance measuring means mounted upon said support, and drive means mounted upon said support and operating to drive said distance

measuring means in response to the rotation of said measuring wheel only during the descent of said measuring tool into a drill pipe.

4,454,656

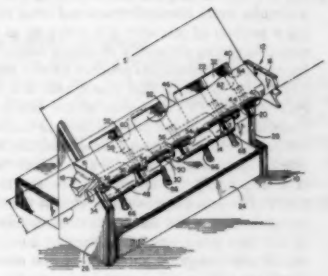
MINIMUM CHORD GAUGE

John P. Arrigoni, Wallingford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 22, 1982, Ser. No. 421,554

Int. Cl.³ G01B *5/20, 7/28*

U.S. Cl. 33—174 C **11 Claims**



1. A gauge for measuring the minimum chord length of an airfoil at intermediate points along the span thereof, comprising:

a base plate;

a first end plate extending upwardly from the base plate, and having a top edge;

a second end plate extending upwardly from the base plate and parallel to the first end plate;

a spindle extending between said end plates along an axis which is perpendicular thereto;

a rotatable gauge plate mounted perpendicularly on said spindle in proximity to the second end plate and having a top edge;

a pin extending upwardly from the top edge of the first end plate to form a "V" stop at a point of intersection of a mutually perpendicular line drawn through the axis of the spindle to the top edge of the plate;

a pin extending upwardly from the top edge of the rotatable gauge plate to form a "V" stop at a point of intersection of a mutually perpendicular line drawn through the axis of the spindle to the top edge of the plate;

at least one floating gauge plate disposed along the spindle at a position intermediate of the first end plate and the rotatable gauge plate wherein the floating gauge plate has a top edge and is movable in a plane perpendicular to the spindle;

a pin extending upwardly from the top edge of the floating plate; and

means for indicating the length of minimum acceptable chord length measured along the top edge of the floating plate in a direction away from the floating plate pin.

4,454,657

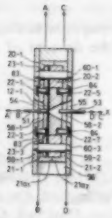
APERTURE SETTING DEVICE

Masaoki Yasumi, Akigawa, Japan, assignor to Japan Aviation Electronics Industry Limited, Tokyo, Japan

Division of Ser. No. 172,305, Jul. 25, 1980, abandoned. This application Mar. 25, 1982, Ser. No. 361,649

Int. Cl.³ G01B *5/00*; B23P *19/00*

U.S. Cl. 33—180 R **7 Claims**



1. A center aligning device comprising:

a first aperture setting means comprising a first frame having a circular outer circumference and inner edges each forming a portion of one side of a polygon, at least three first movable pieces circularly arranged inside said first frame for slideable movement relative to one another and relative to the edges of said first frame in a common plane, each of said first movable pieces being approximately triangular in a plane parallel to said common plane and having an elongated hole formed therein, a portion of one side of each of said first movable pieces forming one side of a first polygonal aperture to be set, and a first drive member disposed opposite one side of the faces of said first movable pieces and having first drive pins thereon, each of said first drive pins being inserted into a corresponding one of said elongated holes of said first movable pieces for simultaneously moving said first movable pieces relative to said first frame to set the size of said first polygonal aperture;

second aperture setting means for setting a second polygonal aperture, said second aperture setting means comprising a second frame, second movable pieces, and a second drive member arranged in the same manner as those of said first aperture setting means; and

coupling means for coupling said first and second aperture setting means to one another such that the axis of said first polygonal aperture coincides with the axis of said second polygonal aperture and the movements of said first and second drive members are independent of each other.

4,454,658

DEVICE TO LOCATE COMMUNICATION SATELLITES

Donald F. Lewis, deceased, late of Grass Valley, Calif., and by Sheri Lewis, administrator, 105 Rockwood Dr., Grass Valley, Calif. 95945

Continuation-in-part of Ser. No. 033,110, Apr. 25, 1979, Pat. No. 4,288,922. This application Sep. 10, 1981, Ser. No. 300,966

The portion of the term of this patent subsequent to Sep. 15, 1998, has been disclaimed.

Int. Cl.³ G01C *1/00*

U.S. Cl. 33—268 **3 Claims**

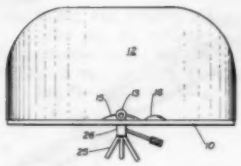
1. A device useful to locate the position of communication satellites comprising:

a flat table having arcuate means adapted to receive a stiff, flexible material;

a transparent screen made of stiff, flexible material fixed to said arcuate mean with said transparent screen having markings indicating the location of communication satellites at a given latitude and longitude with respect to the north-south orientation of said table;

a wide-angle viewer fixed to said table in a position to view said screen with the axis of the wide-angle viewer perpendicular to the tangent of said screen at the south position;

a compass fixed to said table with north-south axis aligned parallel to the axis of said wide-angle viewer; and



a level positioned to indicate the horizontal orientation of the upper surface of said table.

4,454,659

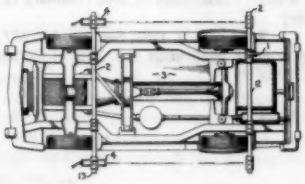
ADJUSTABLE BAR CARRIAGE FOR AN ALIGNMENT APPARATUS

Leonard F. Eck, McPherson, Kans., assignor to Kansas Jack, Inc., McPherson, Kans.

Filed Jun. 7, 1982, Ser. No. 385,711

Int. Cl.³ G01C *15/12*

U.S. Cl. 33—288 **5 Claims**



1. An adjustable carriage for mounting a measurement bar to selected vehicle frame and body portions corresponding to measurement points and comprising:

(a) a carriage block sleeved on and slidably embracing said bar;

(b) said carriage block having clamp means thereon for engagement with said bar and stopping at a selected location;

(c) an adjustable arm mounted on said carriage block and including means facilitating angular shifting of said arm relative to said carriage block and said bar;

(d) a socket mounted on said arm and having a connector means extending outwardly therefrom for connection to said frame and body portions.

4,454,660

ATTACHMENT ASSEMBLY FOR MOUNTING AN INSULATING BLANKET ON A DRYER CYLINDER

Bryan J. Glenister, Beaconsfield, Canada, assigner to Scapa Fab, Inc., St. Laurent, Canada

Filed Apr. 7, 1982, Ser. No. 366,220

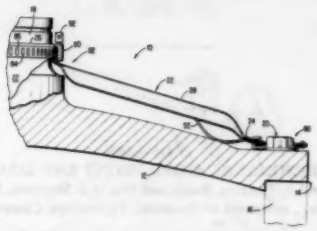
Int. Cl.³ F26B *13/08*

U.S. Cl. 34—41 **12 Claims**

1. A clamp for connecting the outer skirt portion of an insulating blanket to an end of a heated cylinder in a papermaking machine, the cylinder end having a plurality of bolt heads protruding therefrom, said clamp comprising:

a fastener element having a central portion shaped to fit over and partially encircle side surfaces of a bolt head, intermediate portions connected to and extending outwardly from end portions of said central portion, and flexible engagement portions extending from outer end portions of said intermediate portions, said engagement portions being

resiliently deformable and engageable with the outer skirt portion of the insulating blanket to connect the blanket to the cylinder end through the means of the fastener element; and



clip means engageable with said surfaces of the bolt head for preventing removal of a fastener element positioned on the bolt head.

4,454,661

TORNADO FLOW SEPARATOR FOR THE THERMAL TREATMENT OF FINE-GRAIN OR GRANULAR MATERIAL

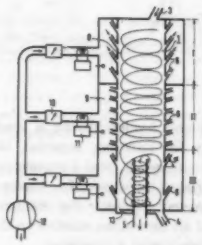
Heinrich Klein; Rudolf Pieper, both of Erlangen, and Eduard Weber, Nuremberg, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim an der Ruhr, Fed. Rep. of Germany

Filed Mar. 2, 1982, Ser. No. 353,881

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1981, 3108875

Int. Cl.³ F26B *17/10*

U.S. Cl. 34—57 E **8 Claims**



1. Tornado flow separator for the thermal treatment of fine-grain or granular material with at least one gaseous medium, comprising a cylindrical reaction chamber having a surface, two ends and at least first, second and third treatment zones of substantially equal length through which the material passes after given dwelling times, tangential feeding means for the gaseous media being disposed in said surface of said reaction chamber in said treatment zones for setting said dwelling time of the material in said third threatment zone to be at least twice as long as said dwelling time in each of said first and second treatment zones, at least one inclined tangential material feed disposed in vicinity of one of said ends of said reaction chamber, at least one outlet for treated material disposed in vicnity of the other of said ends of said reaction chamber, and an exhaust pipe for at least one of excess and spent gaseous media being axially extended into said reaction chamber from along side said material outlet and having a free opening in vicinity of said third treatment zone, said first treatment zone being disposed at the one end of said reaction chamber following said material feed, said second treatment zone being disposed at the other end of said reaction chamber preceding said outlet, said third treatment zone being intermediate said first and second zones, and said free opening of said exhaust pipe being disposed substantially at an end of said third treatment zone closest to said outlet.

4,454,662

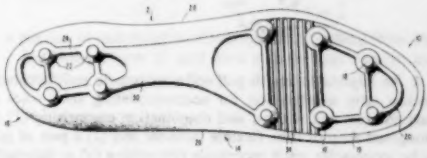
ATHLETIC SHOE SOLE

Jerry D. Stubblefield, 11725 NW. Damascus, Portland, Oreg. 97229

Filed Feb. 10, 1982, Ser. No. 347,419

Int. Cl.³ A43B *7/14, 5/00*

U.S. Cl. 36—91 **20 Claims**



1. A sole for a shoe, comprising:

a unitary member made of a flexible material;

said member having toe, heel and arch portions, an upper surface, a lower surface, and a substantially thin wall, the portions of said upper surface and said lower surface which form said wall having a substantially similar shape;

said wall extending substantially continuously about said heel and arch portions to form a cup shape at said heel and arch, whereby said member is relatively rigid in the region of said arch portion.

4,454,663

SKI BOOT HAVING LATERAL RIGIDIFYING MEANS

Gerard Graillat, Annecy; Serge Pradier, Alby-sur-Cheran, and Georges P. J. Salomon, Annecy, all of France, assignors to Etablissements Francois Salomon & Fils S.A., Annecy, France

Filed Dec. 31, 1981, Ser. No. 336,171

Claims priority, application France, Jan. 9, 1981, 81 00684

Int. Cl.³ A43B *5/04*

U.S. Cl. 36—120 **26 Claims**

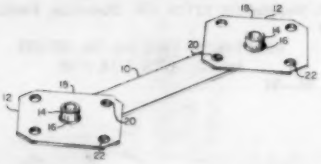
1. A ski boot comprising a shell base with a sole on its bottom, and a calf, said calf being adapted to accommodate the leg of a skier and being pivotably mounted to said shell base along a first pivot axis, said shoe further comprising at least one vertical extension extending from said shell base, said calf being pivotably secured along a second pivot axis on said extension.

4,454,664

ADJUSTABLE-LENGTH, COMBINED GOLF SPIKE RECEPTACLES AND RECEPTACLE ANCHORING DEVICES

Arden B. MacNeil, Garrison House La., Sudbury, Mass. 01776

Filed Jan. 17, 1983, Ser. No. 458,355
Int. Cl.³ A43B *5/00*
U.S. Cl. 36—127 **6 Claims**



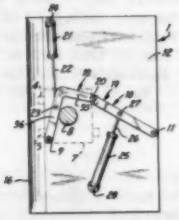
1. An adjustable-length golf spike receptacle and receptacle anchor strip combination for accommodating shoe soles of various sizes and widths, said combination comprising (1) an elongated strip of thin, flexible material and (2) a pair of golf spike receptacles, each receptacle comprising (a) an internally threaded sleeve with an axis centrally of said sleeve and (b) a base plate which is joined to said sleeve at about a right angle to said axis; said base plates being attached, one adjacent to each end, to the elongated strip by attaching means; at least one of said base plates being attached so as to be rotatable about the attaching means whereby through the rotation of said plate the distance between the sleeves may be varied.

4,454,665

ARRANGEMENT FOR ROTATING EQUIPMENT MOUNTED ON EXCAVATING MACHINES

Rolf Mannbro, Sextantgatan 2, 42176 Västra Frölunda, Sweden

PCT No. PCT/SE82/00166, 371 Date Jan. 10, 1983, 102(e) Date Jan. 10, 1983, PCT Pub. No. WO82/04084, PCT Pub. Date Nov. 25, 1982
PCT Filed May 12, 1982, Ser. No. 459,872
Claims priority, application Sweden, May 13, 1981, 81029969
Int. Cl.³ E02F *5/22*
U.S. Cl. 37—103 **3 Claims**



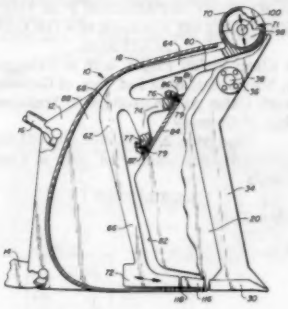
1. Arrangement for equipment mounted on excavating machines and similar machines, such as excavator buckets (1), where the equipment is mounted on an attachment (7) provided for fastening on the equipment arm (2) of the machine by means of a shaft (8) in such a way that the equipment (1) can be rotated in relation to the attachment in the said shaft, characterised in that the attachment (7) has a spigot (9) which is located eccentrically in relation to the shaft (8) and that the equipment (1) has a spigot (11) located at a distance from the said rotating shaft, where a first link (18) is swivel-mounted at spigot (9) on the attachment and a second link (19) is swivel-mounted at the spigot on the equipment, the ends of the said links which are not mounted at the said spigots being swivel-mounted to each other, the first link having a projecting portion (36), the end of which is attached to the said spigot (9) and which is arranged to penetrate behind the said shaft (8) so that the angle of rotation in the direction concerned is extended before the link otherwise makes contact with the shaft (8).

4,454,666

RESONANCE AIDED FRONT END LOADER

Raymond A. Gurries, Reno, and Harry J. Stormon, Sparks, both of Nev., assignors to Resonant Technology Company, Sparks, Nev.

Continuation of Ser. No. 135,797, Mar. 31, 1980, abandoned. This application Mar. 29, 1982, Ser. No. 363,216
The portion of the term of this patent subsequent to Nov. 16, 1999, has been disclaimed.
Int. Cl.³ E02F *3/81*
U.S. Cl. 37—118 R **29 Claims**



1. In a front end loader having a loading bucket which defines a cavity for carrying material, said loading bucket being secured to a tractor, and a transversely elongate cutter blade closely spaced forward of a lower front edge of the bucket, an improved apparatus for reciprocating the blade in the forward and aft directions relative to the front edge of the bucket, the improvement comprising:

a force-transmitting beam having a resonant frequency with at least one node and first and second anti-nodes at the resonant frequency, said beam characterized by two divergent approximately straight legs that meet at a juncture to form an angle less than 180°, and a mounting flange integrally formed in said beam and extending inwardly between said straight legs, said angle chosen to conform to the shape of the loading bucket, the first anti-node being located at the end of one leg, the second anti-node being located at the end of the other leg, and the one node being located at the juncture;

a source of vibrations at or near the resonant frequency coupled to the beam near the first anti-node to vibrate the second anti-node about a neutral position; and

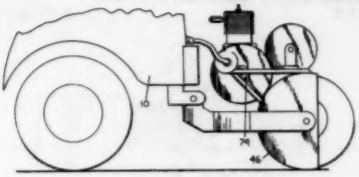
means for securing the mounting flange of the beam to the loading bucket so that the beam is supported completely by the loading bucket without additional framework and moves with the loading bucket so as to position the neutral position of the second anti-node in a consistent spaced aft relationship from the cutter blade within striking distance thereof to apply unidirectional force impulses to the blade in a forward direction as the second anti-node vibrates to drive the blade intermittently forward.

4,454,667

SNOW REMOVAL AND COMPACTION DEVICE

Vendell J. Johnson, 17136 Town Line Rd., Minnetonka, Minn. 55343

Filed Jun. 9, 1983, Ser. No. 502,450
Int. Cl.³ B30B 7/04
U.S. Cl. 37—225 4 Claims



1. A mobile snow removal and compaction device to remove snow from a surface over which it is moving comprising:

a subframe,

a cylindrical housing attached to the subframe and transverse to the direction of motion of the device having an opening at the front and top,

a first drum of smaller diameter than the cylindrical housing coaxially and rotatably mounted within the housing, removal means on said first drum to pick up snow from said surface,

a flat rectangular platform affixed tangentially to the drum and extending almost to the cylindrical housing,

a compaction drum with axial parallel to that of the first drum rotatably mounted adjacent and behind the opening at the top of the cylindrical housing which compaction drum has formed within one side of it a longitudinal hollow chamber which chamber is open along the side and one end,

a paddle rotatable about an axis parallel to that of the first drum and connected to the subframe above the first drum,

drive means connecting the paddle and first drum to synchronize their motions so the paddle sweeps across the flat platform as it rotates through a predetermined portion of its travel and which paddle after such sweep is in covering location over the side of the longitudinal hollow chamber, and

a piston mounted adjacent the open end of the longitudinal hollow chamber which may be activated to travel into the chamber toward the other end of the chamber.

4,454,668

APPARATUS FOR SMOOTHING AND DRYING DAMP LAUNDRY

Theo Krauss, Aue; Ludwig Herrmann, Bockau, and Siegfried Minde, Aue, all of German Democratic Rep., assignors to VEB Kombinat Textima, Karl-Marx-Stadt, German Democratic Rep.

Filed Mar. 4, 1982, Ser. No. 354,870
Claims priority, application German Democratic Rep., Jul. 20, 1981, 231/908
Int. Cl.³ D06F 65/10
U.S. Cl. 38—11 4 Claims

1. An apparatus for drying and ironing laundry comprising:

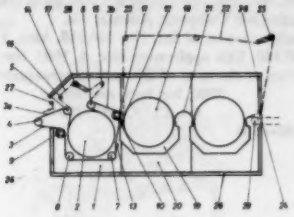
a substantially closed, heat-insulating casing;

at least one heated, driven cylinder mounted in said casing;

first and last mangle units mounted in said casing;

means for guiding laundry to be dried to said cylinder comprising a conveyor belt system positioned around a series of rollers and substantially passing around a portion of the circumference of said cylinder, and including an initial, upwardly inclined area for receiving laundry before said cylinder, and a subsequent downwardly inclined area after said cylinder for transferring laundry to be ironed;

said mangle units having operatively associated therewith an integrated belt system receiving laundry from said downwardly inclined area of said conveyor belt system and transporting laundry from one of said mangle units to the other;



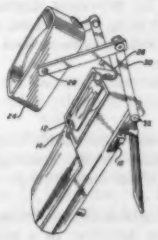
a portion of said integrated belt system travelling from said last mangle unit to said first mangle unit outside said casing.

4,454,669

X-RAY AND PHOTOGRAPHIC VIEWER

Robert N. Simmons, 1451 East 55th St., Chicago, Ill. 60602

Filed Nov. 18, 1981, Ser. No. 322,646
Int. Cl.³ G02B 27/04
U.S. Cl. 40—361 7 Claims



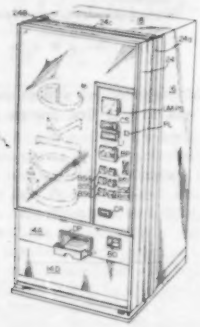
1. A portable X-ray and photographic viewer comprising a body having fixed imaging screen upon which an item to be viewed may be placed, a light source disposed behind said imaging screen and within said viewer body, power means contained within said body for permitting selective energization of said light means to illuminate said screen and an item positioned thereon to permit viewing thereof, magnifying means, and support means on said body supporting said magnifying means for adjustable positioning relative to said screen, said support means including linkage between said body and magnifying means and connected closely adjacent said screen to pivotally couple said body and magnifying means for permitting positioning of said magnifying means between an X-ray viewing position in parallel spaced relation to said screen and a travel position directly overlying said screen without movement of said screen relative to said body, and means on said body for positively and releaseably engaging and retaining said magnifying means when located in said travel position.

4,454,670

VENDING MACHINE DISPLAY PANEL WITH UTILITY MODULE THEREIN

G. Merle Bachmann, Stone Mountain; Charles L. Davis, and Annis R. Morgan, Jr., both of Atlanta, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Continuation-in-part of Ser. No. 244,818, Mar. 17, 1981, Pat. No. 4,380,130. This application Dec. 4, 1981, Ser. No. 327,461
The portion of the term of this patent subsequent to Nov. 15, 2000, has been disclaimed.
Int. Cl.³ G09F *7/00*
U.S. Cl. 40—584 **25 Claims**



1. A vending machine including a control panel with an array of product selector buttons for controlling the vending of products from said machine, comprising:

a coin slot for receiving coins to initiate vending of products;

first and second adjacent vertical columns of product selector buttons, each having a product display area thereon bearing indicia representative of a given product to be vended;

utility module means disposed in said control panel above said coin slot for providing interactive communication with a customer using said machine, who inserts coins into said coin slot and actuates at least one of said product selector buttons;

a plurality of panel means adjacent said control panel defining a like plurality of display fields within a defined display area;

selected ones of said panel means being of contrasting surface characteristics to the remaining said panel means in the provision of selected display configurations in said display area;

one of said selected ones of said display panel means including logo means definitive of a primary product to be dispensed by said vending machine; and

the remaining said selected ones of said display panel means being so configured, in conjunction with said one of said selected panel means, as to suggest the representation by said display panel means of an alphanumeric character representative of the said primary product in addition to said logo means, said alphanumeric character being an abbreviation for said primary product.

4,454,671

TIMETABLE DISPLAY

Johannes Morgenstern, Coral Gables, Fla., assignor to Trans-Ad Corporation, Coral Gables, Fla.

Filed Jul. 7, 1982, Ser. No. 396,117
Int. Cl.³ G09F *15/00*
U.S. Cl. 40—607 **4 Claims**

1. A display apparatus comprising:

first, second and third concentric layers, the first layer being substantially transparent, the second layer bearing information;

said first layer including first and second half cylinders;

said third layer including first and second pairs of half cylinders;

said second layer including first and second display segments;

a retainer ring means having a slot therein for receiving said first and second pairs of half cylinders and said first and second display segments;

first retainer means having a cylindrical, substantially U-shaped channel therein for enclosing said first, second, and third, concentric layers at one end thereof;

second retainer means having a cylindrical, substantially U-shaped channel therein for enclosing said first, second, and third, concentric layers at the opposite end thereof;

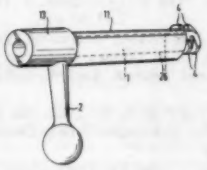
means for fastening said first and second retainer means to said first, second, and third concentric layers;

4,454,672

LOCK MEANS

Jali Timari, Hatanpäänvaltatie 32, 33100 Tampere 10, Finland

Filed Feb. 9, 1982, Ser. No. 347,186
Claims priority, application Finland, Feb. 13, 1981, 810462
Int. Cl.³ F41C *11/00*
U.S. Cl. 42—16 **6 Claims**



1. Lock means for a rifle, comprising a lock frame, a lock bolt carried by said lock frame and having a crank by the aid of which the lock bolt can be moved forward and rearward and locked and unlocked by rotating the lock bolt in said lock frame, said lock bolt including at least one closing shoulder for locking the lock bolt on the lock frame, a guide tube encircling said lock bolt and constituting an outer cover for the lock bolt, said guide tube being rotatable relative to the lock bolt and being non-rotatable relative to the lock frame, the inner surface of the lock frame having a non-circular cross sectional shape and the outer surface of the guide tube having a complementary non-circular shape.

4,454,673

AUTOMATIC SAFETY DEVICE FOR HANDGUNS

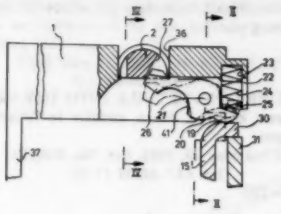
Herbert Meidel, Oberndorf-Aistaig, Fed. Rep. of Germany, assignor to Heckler & Koch GmbH, Oberndorf, Fed. Rep. of Germany

Filed May 12, 1982, Ser. No. 377,405

Claims priority, application Fed. Rep. of Germany, May 20, 1981, 3120024

Int. Cl.³ F41C *17/04*

U.S. Cl. 42—70 F 9 Claims



1. Automatic safety device for handguns, especially self-loading pistols, with a longitudinally movable firing pin which by a spring loaded safety member in a safety bolt is secured positively against longitudinal movement by the fact that the safety member is carried in a recess in a weapon part at right angles to the firing pin, being rotatable out of the path of the firing pin upon the activation of a trigger before the release of a hammer via a release against the force of a spring, characterized by the fact that the safety member is a rocker that rotates around a shaft parallel to the firing pin longitudinal direction, that the rocker has two arms having approximately equal masses and extending in directions approximately 180° apart to neutralize the effects of shock, and that the rocker is held in a secured position by the spring loading at least one arm.

4,454,674

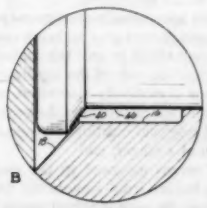
SHOTSHELL CHAMBER

Herman N. Bockstruck, Alton, Ill., assignor to Olin Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 339,238, Jan. 13, 1982. This application Dec. 13, 1982, Ser. No. 449,345

Int. Cl.³ F41C *21/12*

U.S. Cl. 42—76 R 11 Claims



5. In a breech loading shotgun with a chamber at the breech of the barrel intended to be used with commercial shotshells of the rimmed type, a chamber having an enlarged portion with a diameter in said portion of within the range of from 1 mm to 3 mm larger than a standard commercial shotshell head, measured immediately forward of such shotshell's base rim, of the same gauge size as said chamber, said portion extending for an axial distance of at least 3 mm forward from the rim breeching bevel.

4,454,675

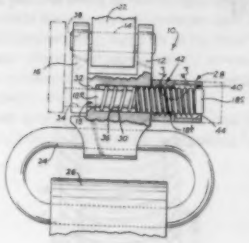
LOCKING QUICK-DETACHABLE SLING SWIVEL

Robert K. Ives, Portland, Oreg., assignor to Michaels of Oregon Co., Portland, Oreg.

Filed Apr. 9, 1982, Ser. No. 367,101

Int. Cl.³ F41C *23/02*

U.S. Cl. 42—85 14 Claims



1. In a quick-detachable-type firearm sling swivel having a body, and a shift/swing gate mounted on the body through an elongated spring-biased plunger, which gate, through manipulation of the plunger, is adjustable between open and closed positions relative to the body to enable mounting, demounting and securing of the swivel relative to an external structure, means for locking the plunger positively and selectively against manipulation thereof to open the gate from the latter's closed position, said locking means comprising

a position-changeable locking element mounted on the plunger for adjustment relative thereto into and out of conditions of effective reactive engagement with the swivel's body to lock and release the plunger, respectively, against and for manipulation of the gate, and

capture means operatively interposed between the plunger and said element inhibiting removal of the element from the plunger.

4,454,676

LINEGUIDE ASSEMBLY

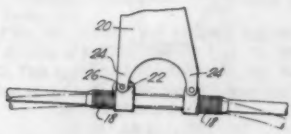
Raymond Humble, Alnwick, England, assignor to Hardy Brothers (Alnwick) Limited, Alnwick, England

Filed Mar. 27, 1981, Ser. No. 248,506

Claims priority, application United Kingdom, Apr. 30, 1980, 8014164

Int. Cl.³ A01K *87/04*

U.S. Cl. 43—24 11 Claims



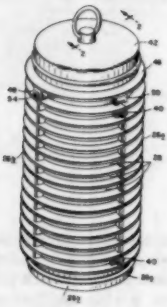
4. A lineguide comprising two mountings adapted to be located on longitudinally spaced portions of a fishing rod, and a line housing connected to the mountings for pivotal movement in the longitudinal direction of the rod, and in which each mounting has an aperture extending transversely therethrough, one aperture being of circular cross-section, and the other aperture cross-section being elongate in the longitudinal direction of the fishing rod.

4,454,677

HOUSING FOR ELECTRICALLY ENERGIZED KILLING ASSEMBLY

Alan Chuang, Taipei, Taiwan, assignor to Armatron International, Inc., Melrose, Mass.

Filed Feb. 1, 1983, Ser. No. 462,757
Int. Cl.³ A01M 1/22
U.S. Cl. 43—112 4 Claims



1. A housing for an insect killing assembly of the type having an elongated light source protruding downwardly from a mounting shelf, the said light source being surrounded by an electrically conductive grid supported by means depending from the lower surface of said shelf, said light source and said grid being energized by an A.C. source via circuit components including a voltage augmenting transformer carried on the top surface of said shelf, said housing comprising;

an enclosure having open ends and surrounding said assembly, said enclosure being defined by a pair of separable half-sections which are each provided with an array of holes through which insects may pass as they are attracted by said light source onto said energized grid;

a removable base closing the lower end of said enclosure; and

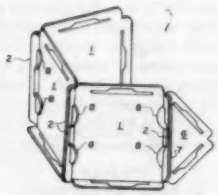
a one-piece water impervious cover detachably mounted to the upper end and closing the upper end of said enclosure, said cover cooperating with said half-sections and said mounting shelf to isolate said circuit components from external moisture.

4,454,678

SLOTTED PANELS WITH SLOTTED CONNECTORS

John E. Duvivier, 706 Woodland Ave., Menlo Park, Calif. 94025

Filed Dec. 7, 1981, Ser. No. 327,935
Int. Cl.³ A63H 33/10
U.S. Cl. 446—112 6 Claims



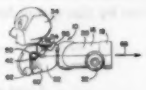
1. For use in building multi-panel educational constructions of various shapes, a plurality of polygonal panels having along each of their marginal edges elongated marginal flaps matching in length, and width and thickness and having fold lines to enable folding said flaps at dihedral angles relative to said panels, cutouts formed centrally of said flaps adjoining said fold lines, a pair of locking pieces of uniform thickness for interlocking a pair of adjoining panels and being of slightly smaller overall dimension and of substantially smaller width than said cutouts, slots in said flaps adjoining the ends of each of said cutouts in communicating relationship therewith and of a width corresponding to the thickness of said locking pieces, said locking pieces each having only a single slot extending outwardly from the center thereof and of a width double the thickness of said flaps, extending to the center thereof whereby when said flaps of a pair of adjoining panels are superimposed in congruent relationship and when a pair of said locking pieces are introduced into said cutouts of said pair of adjoining panels and moved laterally with their slots extending to the ends of said slots in said flaps, they will effect firm interlocking of said adjoining panels.

4,454,679

TOY FIGURE CONVERTIBLE INTO TOY VEHICLE

Iwakichi Ogawa, Kashiwa, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

Filed May 20, 1982, Ser. No. 380,298
Int. Cl.³ A63H 11/10
U.S. Cl. 446—290 18 Claims



1. A toy figure convertible into a toy vehicle comprising:

a first portion configured to simulate a pair of legs and torso of a substantially upright-standing person, said portion having a general longitudinal axis disposed substantially vertically when the toy figure is disposed upright to substantially simulate an upright-standing person;

first wheel means mounted to the first portion for permitting locomotion of the toy figure;

a second portion substantially configured to simulate a neck and a head, said second portion being mounted to the first portion to pivot about an axis substantially normal to the general longitudinal axis of the toy figure;

positional means operatively associated with the first and second portions for maintaining the second portion in one of a first and a second position relative to the first portion at the option of a player, and

second wheel means mounted to the second portion and substantially hidden from view in the first position of the second portion, the second wheel means being exposed to view and capable of coming into contact with a support surface when the second portion is disposed in its second position, whereby in the second position the first wheel means and second wheel means cooperate to provide locomotion for the toy figure on the support surface, wherein the positional means comprise a spring mounted to the second portion and a pawl operatively connected with the spring, pivotably mounted to the first portion, and having a protruding part accessible for manipulation by an operator, and wherein the second portion includes means for removably engaging the pawl, the pawl engag-

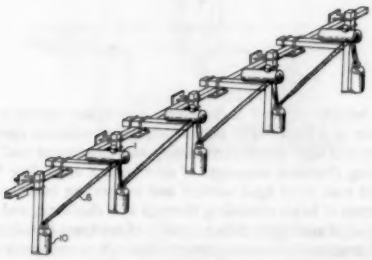
ing means and the pawl normally keeping the second portion in the first position wherein the second wheel means are substantially hidden from view, the spring attempting to bias the second portion into the second position and moving the second portion into the second position when the pawl is manipulated by the operator to disengage the pawl engaging means.

4,454,680

ROPE WICK CHEMICAL RECOVERY APPARATUS

Jim E. Dale, Greenville, Miss., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 14, 1982, Ser. No. 378,317
Int. Cl.³ A01C *15/00*
U.S. Cl. 47—1.5 **5 Claims**



1. An apparatus for recovery and recycling of unused liquid agricultural chemicals dispensed from a rope wick applicator which is brought into contact with foliage and plants, said apparatus comprising in combination:

(a) a first reservoir containing agricultural chemical for storage;

(b) a diagonally positioned rope wick, said rope wick forming a decending loop of predetermined length necessary to contact the foliage and plants to be treated, said rope having two free ends affixed through the bottom of the first reservoir and the center/middle affixed to a support member, said ends immersed into said chemical solution, thereby enabling the wick to transport chemical solution by means of capillary action and gravity through the wick, thereby saturating the wick with chemical solution, said support member positioned below and to the side at an angle of 30° to 45° of said first reservoir, thereby setting the angle of diagonal on the wick;

(c) a second reservoir located below the affixed center/middle of the rope wick, said second reservoir with an opened top to catch and store the unused agricultural chemical solution which drips from the center/middle point of said rope wick;

(d) means for mounting and supporting said first reservoir, second reservoir, and said support member with respect to each other.

4,454,681

METHOD AND MEANS OF SECURING A PLANT POT TO A SHELF

Charles J. White, 1032 - 121st St., Rock Island, Ill. 61201

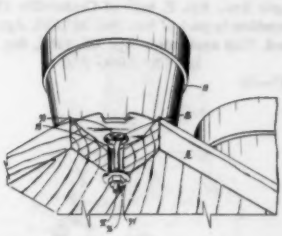
Filed Nov. 15, 1982, Ser. No. 441,443
Int. Cl.³ A47G *7/02*
U.S. Cl. 47—39 **2 Claims**

1. In combination a plant pot and means securing said plant pot to a shelf, said plant pot having a bottom wall with a drain hole therein, said shelf having an upper surface, a lower surface, and a vertical bore extending therethrough; said pot resting on said upper surface of said shelf with said drain hole in registered alignment with said bore; said securing means comprising:

bracket means within said pot, said bracket means having a crossbar with a length greater than the diameter of said drain hole of said pot, said crossbar having opposite horizontal ends with a U-shaped portion therebetween, said U-shaped portion being fit within said drain hole with said opposite ends resting on said bottom wall of said pot;

said bracket means being sized so as to leave at least a portion of said drain hole unobstructed when said U-shaped portion is within said drain hole for permitting moisture to drain through said drain hole;

an elongated member having an upper end formed into an open ended hook and having a threaded lower end, said



open ended hook being shaped and sized to fit within said drain hole, said open ended hook retentively engaging said U-shaped portion of said crossbar within said drain hole;

said elongated member extending completely through said vertical bore of said shelf with said threaded lower end protruding downwardly below said lower surface of said shelf, and with said hook retentively engaging said U-shaped portion within said drain hole;

washer means mounted on said lower end of said elongated member and having a diameter greater than said bore; and

nut means threaded on said lower end of said elongated member, said nut means holding said washer means thereon and forcing said washer against said bottom surface of said shelf.

4,454,682

SUBSTITUTED 2-IMINO-1,3-DITHIO AND 1,3-OXATHIO HETEROCYCLIC COMPOUNDS AS HERBICIDAL ANTIDOTES

Frederic G. Bollinger, Creve Coeur, Mo., assignor to Monsanto Co., St. Louis, Mo.

Division of Ser. No. 170,506, Jul. 21, 1980, Pat. No. 4,317,310, which is a division of Ser. No. 960,987, Nov. 15, 1978, Pat. No. 4,231,783. This application Nov. 19, 1981, Ser. No. 322,791
The portion of the term of this patent subsequent to Mar. 2, 1997, has been disclaimed.
Int. Cl.³ A01C *1/06, 21/00*
U.S. Cl. 47—57.6 **4 Claims**

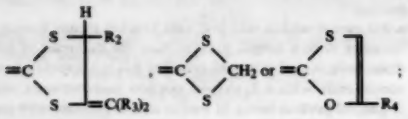
1. Wheat seed, the plants grown from which are resistant to injury by triallate herbicide, comprising crop seed coated with a safening effective amount of a compound of the formula

$$R-N=A$$

or an agriculturally acceptable salt thereof, wherein

R is lower alkyl,

A is

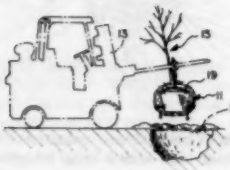


R_2 is hydrogen or methyl;
R_3 is hydrogen or chloro;
R_4 is hydrogen, methyl or phenyl.

4,454,683
TREE CLAMP

Jack E. Schauer, 78 Bradstreet Rd., and Clarence E. Schauer, 128 Maple Ave., Apt. F, both of Centerville, Ohio 45459

Continuation-in-part of Ser. No. 367,634, Apr. 12, 1982, abandoned. This application Apr. 25, 1983, Ser. No. 487,933
Int. Cl.³ A01G *23/04*
U.S. Cl. 47—76 **6 Claims**



1. A tree clamp for use in supporting a tree having a trunk base and roots defining a ball, comprising:

not more than two essentially rigid plate members for disposition adjacent the ball with said members on opposite sides thereof, each of said plate members being formed with a downward taper so that said plate member had downwardly converging side edges providing a bottom edge of less length than its top edge, said plate members being further formed of a shape and size so as to cover only a portion of the ball surface;

a pair of flexible non-resilient connecting members, each said connecting member being attached at one end thereof to one side edge near the bottom edge of one of said plate members, with said connecting member being extendable about the ball and connectable with an opposing side edge of the other of said plate members, said connecting members providing the sole means of interconnection between said plate members whereby the top edges thereof are unconnected and freely movable, said tapered plate members and said connecting members cooperating to facilitate pulling the bottom edges of said plate members partially beneath the lower part of the ball; and

suspending means including a second pair of flexible non-resilient connecting members, each said member of said second pair being connected at each of its ends to one of said plate members substantially near the top of one of said plate members to extend along the upper edge and substantially between the side edges thereof, and a pair of hooks, each engageable with one of said members of said second pair.

4,454,684
ROOT AUGMENTOR FOR VERTICAL HORTICULTURE

Louis R. O'Hare, 1700 Banyan #3, Fort Collins, Colo. 80526

Filed Mar. 16, 1983, Ser. No. 454,704
Int. Cl.³ A01G *25/00*
U.S. Cl. 47—82 **7 Claims**

1. A system for suspending plant roots in air and for augmenting root mass of plants grown hydroponically in a vertical array comprising:

(1) a seed sprouting and early root support means in the form of a vertical column of particulate support material enclosed by a cylindrical wall, said wall having a plurality of holes, said support means being capable of firmly supporting plant seeds, early roots and branches by means of said support material and by said holes in the wall, said column containing also plant nutrient and water which it is able to receive through an opening at the top of the wall.

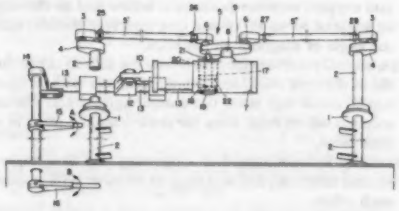
(2) a branch segment to root mass conversion means in the form of a light shield and a hydroponic solution applicator, said light shield surrounding said cylindrical wall and being shielding segments of said branch extending from said wall from light contact and supporting branches by means of holes extending through said shielding, and said solution applicator being capable of applying liquid nourishment to the branch segments through an opening in said shield,

(3) continueing nourishment to suspended roots application means capable of supplying both nutrient solution and air to the suspended root system.

4,454,685
VEHICLE DOOR CONSTRUCTION

Bart van der Sloot, Weidum, and Sijtse Epema, Giekerk, both of Netherlands, assignors to Tebel Machinefabrieken B.V., Netherlands

Continuation-in-part of Ser. No. 50,339, Jun. 20, 1979, abandoned. This application Jun. 3, 1981, Ser. No. 269,893
Int. Cl.³ E05C *7/06*
U.S. Cl. 49—110 **5 Claims**



1. A door construction for a vehicle, comprising a one-leaved or two-leaved door of the swing-plug type which through the intermediary of one or more brackets, secured to a rotatable, vertical shaft, the ends of which are connected to the floor and roof sections of the carriage, can be opened or closed by rotating said shaft, a drive means for rotating said rotatable shaft, which drive means acts via a connecting rod forming part of a linkage in a first pivot thereof on a first arm secured to said rotatable shaft, and by means of which drive means the door can be locked in a closed position, characterized in that, said drive means has a turning shaft (8) fixedly connected to a second arm (9) which is pivotally connected to

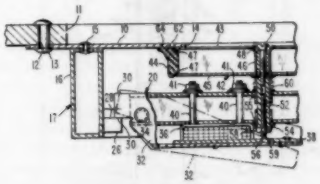
said connecting rod (5) in a second pivot (6) thereof, said linkage in a single point in the closed position of the one-leaved or two-leaved door being locked according to the overcenter closing principle by means of a stop means (21) limiting rotation of the second arm (9), and said door being resiliently movable in the plane of the door opening by having at least one sealing strip along a vertical side edge which provides a limited resilient force in the plane of the door opening for biasing said second arm against said stop means for overcenter locking of the door.

4,454,686

PRESSURE-RELIEVING CLOSURE PANEL

Ralph H. Stapenell, 4543 Kavan Ct., Doylestown, Pa. 18901

Filed Sep. 28, 1982, Ser. No. 426,002
Int. Cl.³ E05C *15/02*
U.S. Cl. 49—141 **4 Claims**



1. In a pressure relief apparatus of the type including a support means having a relief opening and adapted for mounting on an enclosure susceptible to the development of excess internal pressure, and further having at least one panel support arm hingedly attached to the support means for movement between normal and pressure-relieving positions, the improvement comprising a pressure relief panel mounted on said arm for limited linear movement in respect thereto from a normal first position closing the opening through a second position to a third, pressure-relieving position spaced from the opening a distance sufficient to relieve the enclosure of excess pressure developing therein, springs compressed between the arm and panel adapted for biasing the panel to its normal closing position, means releasably latching the arm in its normal position, and a resilient gasket on the panel sealably pressed by the force of the springs against the support means in a direction paralleling that in which internal pressure is exerted against the panel, the gasket including side-by-side primary and secondary sealing beads both of which project toward the support means with the primary bead projecting to a lesser extent than the secondary bead, both beads being sealably compressed against the support means in the normal, first panel position in the presence of a predetermined normal pressure within the protected enclosure, the panel being movable to its second position when said normal pressure is exceeded, sufficiently to space the primary bead from the support means while leaving the secondary bead sealably compressed against the support means, the latch means being operable to free the panel for movement to its third position responsive to continued excess internal pressure exerted thereagainst with the secondary bead in its sealing position.

4,454,687

GUIDE AND SUPPORT ASSEMBLY FOR A WINDOW PANE

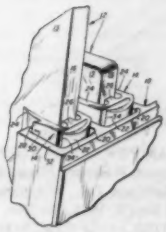
Joe L. Baker, Carman, Ill., assignor to J. I. Case Company, Racine, Wis.

Filed Oct. 20, 1982, Ser. No. 435,408
Int. Cl.³ E05D *13/00*
U.S. Cl. 49—419 **6 Claims**

1. An arrangement for movably supporting a windowpane having expansive surfaces comprising:

track means with respect to which said windowpane is generally movable; and

unitary guide means adapted to receive a marginal edge portion of said windowpane and comprising a pane-engaging portion which is generally U-shaped, including a web base portion adapted to engage the marginal edge portion of said windowpane, and a pair of finger portions adapted to respectively engage the expansive surfaces of said windowpane, and further comprising at least on portion of reduced cross section joining at least one of said finger portions to said web base portion to accommodate resilient engagement of said guide means and said windowpane, said guide means being adapted for interengagement with said track means for relative movement with respect



thereto, said arrangement including retention means for retaining said guide means within said track means;

said guide means including integral biasing means adapted for operative engagement with said track means to control sliding movement of said guide means and said windowpane together with respect to the support means, and

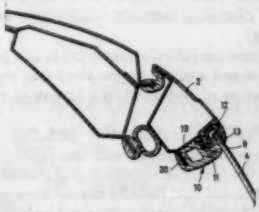
comprising a portion extending generally away from said marginal edge of said windowpane and including at least a portion adapted to be spaced from said U-shaped portion of said guide means that is generally arcuate in cross section and adapted to resiliently bias said guide means with respect to said track means for facilitating selective positioning of said windowpane with respect to said track means.

4,454,688

WINDOW GUIDE AND SEAL FOR LOWERABLE VEHICLE WINDOW

Heinz Rest, Cologne, and Ralf Giese, Mechernich-Kommern-Süd, both of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 15, 1982, Ser. No. 358,157
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1981, 3110669
Int. Cl.³ B60J *5/04*
U.S. Cl. 49—502 **6 Claims**



1. Window guide and seal for a lowerable window in a motor vehicle door, of which the plane of the window is in aligment with the external surface of the bodywork and which

is connected at its edges with edge strips forming inward-rebounding rims which interact with guideways and sealing strips disposed in the frame opening, characterized in that the window is firmly connected only at its lateral and vertical edges with guideways and at its upper inclined and horizontal edge interacts with a sealing strip fixed in the frame opening, the sealing strip being fixed in the upper section of the frame and comprising an elastic sealing portion and a metallic supporting portion carried internally of the elastic sealing portion and being of S-shaped cross-section partially surrounding a portion of the frame, the elastic sealing portion having an external sealing lip which supports the window from the outside, the metallic supporting portion extending within the external sealing lip to increase the outboard support for the window.

4,454,689

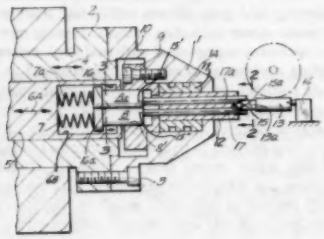
CLAMPING ARRANGEMENT

Karl-Heinz Giebmanns, Westport, Conn., assignor to ITM International Tool Machines, Inc., Westport, Conn.

Filed Sep. 9, 1981, Ser. No. 300,595

Int. Cl.³ B23B *33/00*; B23C *3/36*; B24B *3/18*

U.S. Cl. 51—217 R **4 Claims**



1. In a grinding machine, an improved clamping arrangement for a longitudinal tool blank having a portion with an even number of sides in cross-section, the improvement comprising,

holding means adapted to engage one end of said longitudinal tool blank along its longitudinal axis;

clamping means being operatively mounted on a drive shaft which is reciprocally movably mounted in said grinding machine;

said clamping means include a housing having a first bore which is axially aligned with said holding means and said tool blank which is adapted to be clamped therebetween;

a pair of clamping members reciprocally mounted in said housing;

biasing means operatively connected to said pair of clamping members and adapted to bias them into engagement with said portion of said tool blank having an even number of sides;

said pair of clamping members including a pair of rods which remain in contact with and support the tool blank during the grinding operation and further which extend parallel to and equidistantly spaced from said longitudinal axis; each rod having at its free end a planar surface which is equiangularly skewed with respect to the longitudinal axis, so that, said clamping means can accomodate said tool blanks of different widths; said planar surface being adapted to engage an edge of the end of the portion of said tool blank having an even number of sides in cross-section.

4,454,690

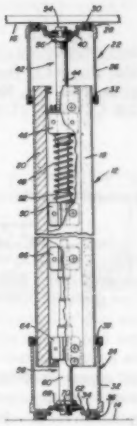
PORTABLE AND OPERABLE WALL SYSTEM

Guy E. Dixon, Miami, Fla., assignor to Panelfold, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 727,605, Sep. 28, 1976, Pat. No. 4,103,463, and a continuation-in-part of Ser. No. 770,064, Feb. 18, 1977, Pat. No. 4,277,920. This application Nov. 30, 1977, Ser. No. 856,161

Int. Cl.³ E06B *7/28*; E04D *15/00*

U.S. Cl. 52—126.3 **7 Claims**



1. A panel positionable between a floor surface and an overhead surface comprising a rigid panel having top and bottom edges, a channel along the bottom edge of the panel for engaging the floor surface, and a channel along the top edge of the panel engaging the overhead surface, means resiliently biasing one of said channels vertically outwardly in relation to the panel for forming a sound, light and air seal at the top and bottom of the panel, said resilient biasing means including lengthwise compressible resilient means, means initially adjusting said vertically movable channel to a position just beyond its final position without changing the force exerted thereon by the resilient biasing means, both of said channels being vertically movable with at least one of said channels being resiliently biased outwardly of the panel, each of said channels including guide means connected with the panel for guided vertical movement in relation thereto, said guide means includes an elongated rod extending through and journaled in the channel, an outer portion of said rod being externally threaded and the inner portion thereof being externally smooth, a floating guide block screw threaded onto the threaded portion of the rod, floating block guide means in the panel for preventing rotation of the floating block but enabling vertical movement thereof, a stationery guide block in the panel in spaced relation to the floating guide block and including an aperture rotatably and reciprocally receiving the portion of the rod inwardly of the externally threaded portion thereof, said resilient biasing means including a compression coil spring encircling the rod and interposed between the stationary block and floating block to bias the floating block, rod and channel outwardly in relation to the panel, and means on said rod accessible exteriorly of the channel to enable rotatable adjustment of the threaded rod in relation to the floating block in order to adjust the initial position of the channel whereby compression of the spring will enable the channel to conform with variations in the floor-to-ceiling height with the initial adjustment of the channel enabling the force necessary to further compress the spring during movement of the channel to its final position to be a minimum and constant force, and manually actuated means selectively retracting the resiliently

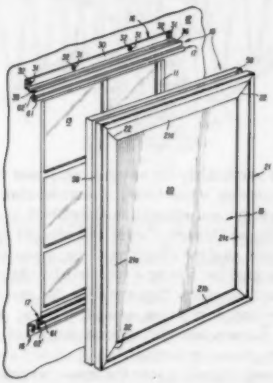
biased channel toward the panel and releasing the channel for outward movement.

4,454,691

APPARATUS FOR INSULATING WINDOWS AND THE LIKE

Robert A. Mitchell, R.D. #1, Box 462-A, Voorheesville, N.Y. 12186

Filed Oct. 2, 1981, Ser. No. 308,169
Int. Cl.³ E06B *3/26*; E05B *65/04*
U.S. Cl. 52—202 **30 Claims**



1. Apparatus for insulating openings through building walls; the apparatus comprising:

means for attaching the apparatus to the surface of the wall at a location adjacent to the periphery of the opening;

shutter means secured to the attaching means for covering said opening to provide a thermal barrier;

means for coupling said shutter means to said attaching means for selected movement relative thereto between the position covering the opening to a position displaced from said opening;

wherein said shutter means includes:

at least one panel having at least a core formed in an insulating configuration, which core has a surface for covering the opening and edges, at least one of which is positioned adjacent to said attaching means, and

a frame attached adjacent to the edges and extending around the periphery of the panel, said frame comprising a relatively stiff portion to which the panel is secured and a relatively soft portion for forming a seal around the opening; wherein the stiff portion of the frame is a substantially U-shaped channel which in cross-section has a pair of legs connected by a bight which holds the legs in spaced relation, wherein the panel is received between the pair of legs, the relatively soft portion extending over the one leg which overlies the wall when the shutter is closed, and wherein the frame includes a groove with a relatively narrow opening and an expanded cross-section for receiving a complementary projection on the coupling means.

4,454,692

METAL DECK RACEWAY CONSTRUCTION

Robert L. Ault, Saltsburg, Pa., assignor to Epic Metals Corporation, Rankin, Pa.

Filed Oct. 30, 1981, Ser. No. 316,682
Int. Cl.³ E04B *5/48*
U.S. Cl. 52—221 **23 Claims**

1. A metal raceway structure adapted for use in concrete-metal composite floor constructions comprising

an elongated metal deck having alternating ribs and valleys, a sheet underlying and cooperating with said metal deck to define a plurality of cells,

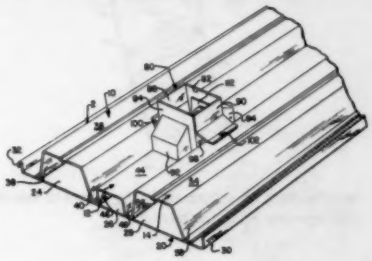
said metal deck having first and second spaced generally downwardly open ribs of generally equal height,

a third rib of lesser height than said first and second ribs being generally downwardly open and interposed between said first and second ribs,

said ribs having a top wall and depending sidewalls,

said first and second ribs having sidewall openings in sidewalls facing said third rib,

said first and second rib sidewalls facing said third rib being spaced from said third rib, whereby when concrete is poured onto said metal deck it will enter the spaces between said sidewalls facing said third rib and said third rib,



housing means having at least a portion disposed in overlying relationship with respect to said third rib,

said housing means being in communication with said first and second ribs through said sidewall openings,

said housing means having a longitudinally projecting extension,

an electrical receptacle disposed within said extension having socket means facing the interior of said housing means, and

said third rib having at least one top wall opening, whereby separate utility supply means may be disposed in said cells and access to utilities in all three cells may be had at a single location.

4,454,693

CONTINUOUS-UNLOADING SILO

Raymond R. Price, Rochester, Minn., assignor to Rochester Silo, Inc., Rochester, Minn.

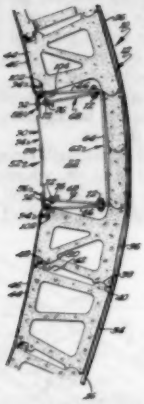
Filed Mar. 5, 1982, Ser. No. 354,139
Int. Cl.³ B65G *53/50*
U.S. Cl. 52—248 **39 Claims**

1. A silo, said silo comprising:

an interior chamber, said chamber comprising a chamber wall having an inner surface;

a continuous discharge passage extending substantially the height of said chamber and being located in said wall; and

a discharge opening connecting said passage and said chamber, said opening extending continuously through said



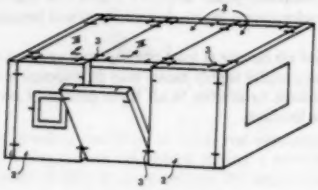
inner surface for substantially the height of said chamber, said opening being unobstructed.

4,454,694

PROTECTIVE ENCLOSURE FOR A STATIONARY OR MOVABLE MACHINE

Robert Davanture, 7 Clos Savaron, 69004 Lyon, France

Filed Jan. 16, 1981, Ser. No. 225,807
Claims priority, application France, Jan. 23, 1980, 80 01700
Int. Cl.³ E04B 1/82
U.S. Cl. 52—270 9 Claims



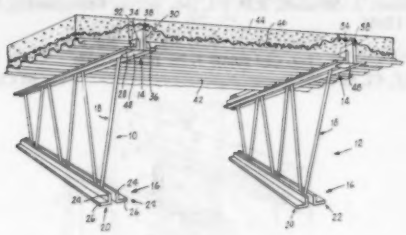
1. A protective enclosure for a machine or the like, said enclosure comprising a series of wall panels and a roof comprising roof panels, said wall and roof panels being separably and rigidly connected to each other without additional rigidifying members connecting more than two of said panels, each of said wall and roof panels comprising means for connecting adjacent wall and roof panels, said connecting means being located on the outside of each of said wall and roof panels when assembled into a rigid enclosure, said connecting means permitting rapid assembly and disassembly of said enclosure; wherein said wall and roof panels are individually removable; whereby ready access can be gained to any part of said enclosure by removal of a single wall or roof panel, said enclosure obviating a separate and distinct door and the removal of said roof for access into said enclosure; each of said panels comprising a plate with folded edges, said edges defining a recess receiving insulated material, said recess being located on the inner surface of each of said panels when said enclosure is assembled; and means for assembling at least two panels perpendicularly with respect to each other, said assembling means comprising at least one sleeve attached to one of said at least two panels, said sleeve having a bore, the axis of said bore being oriented perpendicularly to the plane of said one panel, said bore being attached to an outside surface of said one panel.

4,454,695

COMPOSITE FLOOR SYSTEM

Joel I. Person, 28 N. Third St., Brooklyn, N.Y. 11211

Filed Jan. 25, 1982, Ser. No. 342,467
Int. Cl.³ E04B 1/16, 5/19
U.S. Cl. 52—334 5 Claims



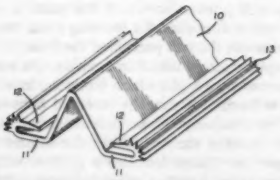
1. A joist particularly for use in a composite concrete floor system comprising a top chord, a bottom chord and a web including tension and compression members in the space between the top and bottom chords and secured to said top and bottom chords, said top chord including a pair of steel angled bars, each angled bar having a substantially planar vertical leg and a substantially planar horizontal leg, the vertical legs of the first and second bars being spaced apart at predetermined horizontal distance and the vertical height of said first bar being greater than the vertical height of said second bar, the top of the web extending into the space between the vertical legs of the first and second bars to a point between the top of the vertical leg of the first bar and the top of the vertical leg of the second bar, the space between the vertical legs of said first and second bars being sufficient to permit concrete, when poured, to flow between said vertical legs to firmly interlock with said web and vertical legs of said joist.

4,454,696

MOTION BEAD FILLER STRIP

William I. Tuttle, Warren, Ohio, assignor to The Bostwick Steel Lath Company, Niles, Ohio

Filed Jun. 9, 1983, Ser. No. 502,712
Int. Cl.³ E04B 2/06
U.S. Cl. 52—346 7 Claims



1. A motion bead filler strip for installation in an expansion joint formed by spaced expanded steel lath having inturned flanged edges, said filler strip including an elongated flexible central section formed of joined angular sections, integral continuous oppositely disposed flanges extending outwardly along each edge of said flexible central section on a common plane, the longitudinal edges of said continuous flanges being doubled back thereover so as to define flexible longitudinally extending pockets between said continuous flanges and said doubled back edges thereof for resiliently and flexibly engaging the inturned flanged edges of said expanded steel lath.

4,454,697

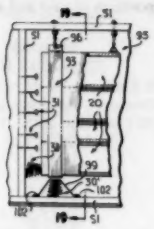
THERMAL INSULATING SYSTEM PARTICULARLY ADAPTED FOR BUILDING CONSTRUCTION

Harrison G. Dyar, P.O. Box 185, Tampa, Fla. 33601

Division of Ser. No. 215,083, Dec. 10, 1980, Pat. No. 4,334,395. This application May 3, 1982, Ser. No. 374,260

Int. Cl.³ E04B *1/78*

U.S. Cl. 52—407 **4 Claims**



1. A system for insulating building walls, ceilings, floors or like structure comprising wall means for forming a hollow insulating panel defining an interior chamber under negative pressure, means contacting a limited exterior surface area of said panel for supporting said panel in generally spaced relationship from an associated building wall, ceiling, floor or like structure, means normally spaced from the exterior surface of said panel for contacting a limited exterior surface area of said panel only upon said first-mentioned contacting means becoming inoperative which would in the absence of said second-mentioned contacting means result in direct contact between said panel and the associated building wall, ceiling, floor or like structure, said second-mentioned contacting means including a coil spring, and means for holding said coil spring in at least partially compressed condition while in its normally spaced relationship to the panel exterior surface.

4,454,698

MODULAR MEMBER FOR FORMING COMPOSITE FALSE-CEILINGS

Giorgio Manzelli, Via Sandro Gallo, 18, Lido di Venezia, Venezia, Italy

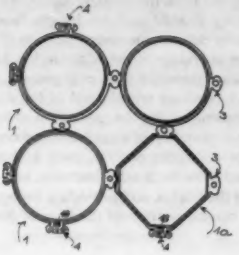
Division of Ser. No. 192,569, Sep. 30, 1980, abandoned. This application May 17, 1982, Ser. No. 378,553

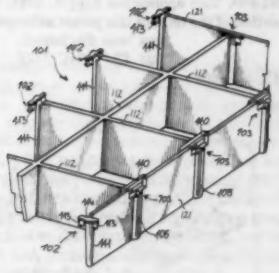
Claims priority, application Italy, Sep. 28, 1979, 30785/79[U]; Dec. 7, 1979, 30826/79[U]

Int. Cl.³ E04C *2/42*

U.S. Cl. 52—581 **9 Claims**

1. A module for forming composite false-ceilings comprising a grid formed by walls extending transversely to each others in a first and in a second direction, said grid forming walls having end portions forming outer sides of said grid; at least, two side walls connected to end portion of said grid forming walls, said grid forming walls and side walls having an equal height defining a module height; matching engagement means provided at said outer sides of said grid and extending towards exterior of said grid, said matching engagement means consisting of male elements and female elements provided on different outer sides of said grid, each said male element comprising a substantially conical pin extending throughout said module height and having, at a larger base thereof, a head extending substantially perpendicularly to said conical pin, said head presenting a face looking towards said conical pin and supporting at said face at least one snap means, each female element comprising a substantially cylindrical body having smaller height than said module height thereby defining a free portion, said substantially cylindrical body presenting a hole therein and a longitudinal slot extending throughout said cylindrical body height, said free portion of said wall having at least one port cooperating with said at least one snap element of adjacent modules thereby causing a snap engagement of said snap element with





said port and therefore a snap engagement of adjacent modules with each other.

4,454,699

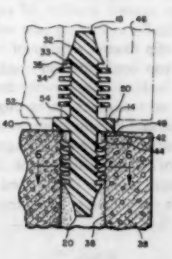
BRICK FASTENING DEVICE

Fred Strobl, 1461 Arthur Dr., Provo, Utah 84601

Filed Mar. 15, 1982, Ser. No. 358,347

Int. Cl.³ F16B *13/02, 13/04, 19/00*

U.S. Cl. 52—585 **4 Claims**



1. A device for fastening together bricks which have apertures to receive the device, the device comprising:

elongated support means insertable into the apertures of two adjacent bricks;

stop means extending outward from the support means, intermediate the extremities thereof, for engaging the adjacent bricks to limit penetration of each of the adjacent bricks by the device and to ensure penetration of both adjacent bricks by the device; and

a plurality of resilient, longitudinally spaced transverse fins extending radially outward from and concentric with the support means so as to be in interference relationship with

the adjacent bricks, the fins each being similarly configured and divided into a plurality of blades which extend radially out from the support means, the blades of adjacent fins being aligned to form longitudinal rows, and being resiliently deformable upon insertion of the support means into the apertures of the adjacent bricks such that the fins are biased outward into engagement with the adjacent bricks to restrain withdrawal of the device from each of the adjacent bricks; the support means comprising a shaft having a plurality of rounded lobes corresponding to the number of blades per fin, each lobe of the shaft being recessed from both sides laterally, and from the end radially, of the blades, and providing support for a row of fins at the central portion of the base of each blade.

4,454,700

SUSPENDED WOODBEAM CEILING

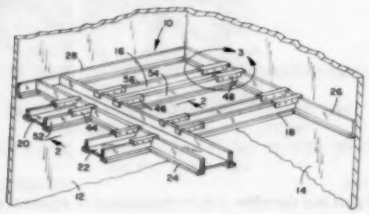
Gilbert G. Kern, 515 N. Victory Blvd., Burbank, Calif. 91502

Continuation-in-part of Ser. No. 28,904, Apr. 10, 1979, Pat. No. 4,281,498. This application May 4, 1981, Ser. No. 259,858

The portion of the term of this patent subsequent to Aug. 4, 1998, has been disclaimed.

Int. Cl.³ E04C *2/42*

U.S. Cl. 52—665 **5 Claims**



1. A beam for a suspended beam ceiling structure, said beam comprising:

two upwardly extending wood webs lying parallel to each other and each having a substantially flat top and an outwardly extending and upwardly facing lip on one side of each said wood web so that said lips face away from each other, the end of said beam being configured to transversely engage against another of said beams with said webs longitudinally extending past said lips;

a metal locking clip having a body of rectangular inverted U-shaped flat-top configuration engaged over each said web and, said locking clips having dimples formed in the body thereof, said dimples being engaged in said wood webs to restrain said locking clips on said wood webs, said locking clips each having a hook finger thereon extending past the end of its web, said hook finger being dimensioned to engage over the flat topped web of an adjacent beam to which said beam is to be engaged.

4,454,701

ANCHORING OF MATERIAL TO CONCRETE

Fred A. Walter, 12310 W. Cold Spring Rd., Greenfield, Wis. 53228

Filed Jul. 12, 1982, Ser. No. 397,594

Int. Cl.³ E04B *1/38*

U.S. Cl. 52—704 **6 Claims**

1. For use in joining a body of wood or the like to a body of concrete wherein said bodies are initially disposed in loose engagement and a hole has been drilled through said wood and into said concrete, and anchor comprising:

(a) a pair of generally straight-sided connector elements,

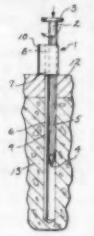
(b) the first of said elements comprising a hard metal nail having a head and tip joined by a spirally fluted shank,

(c) the second of said elements comprising a headless pin of soft malleable metal,

(d) a notch disposed in said pin adjacent to but spaced from the upper pin end to separate the pin into top and bottom portions,

(e) said nail and the said top portion of said pin being disposed in overlapping longitudinal position with the tip of said nail being in a transverse plane containing said notch,

(f) and a breakable retaining band encircling and holding the overlapping portions of said nail and pin together,



(g) the construction being such that upon insertion of said pin into the drilled hole and then driving of said nail into the hole alongside said pin, said top pin portion automatically breaks away at said notch upon engagement by said nail head, and said nail threads into said bottom portion of said pin where said pin is progressively crushingly deformed and confined between said nail and the wall of the hole to lock the bodies together.

4,454,702

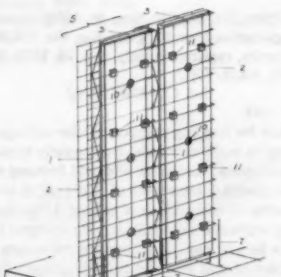
BUILDING CONSTRUCTION AND METHOD OF CONSTRUCTING SAME

Juan Bonilla-Lugo, and Felix A. Rodriguez-Molinary, both of Avenue Hostos No. 103, Ponce, P.R.

Continuation-in-part of Ser. No. 246,969, Mar. 24, 1981, which is a continuation of Ser. No. 960,414, Feb. 8, 1979, abandoned. This application Nov. 27, 1981, Ser. No. 325,398

Int. Cl.³ E04C *2/26*; E04G *21/00*

U.S. Cl. 52—745 **5 Claims**



1. A method of constructing a building comprising

a. providing a concrete footing in situ having a plurality of metal members extending outwardly therefrom;

b. providing at least one module for each wall and each ceiling of the building to be constructed by bending an open wire mesh in a substantially U-shaped configuration and closing the open end thereof with a joist;

c. disposing at least one core within each module and maintaining the core in place with wire rig ties connected to

the mesh and extending through the core bore hole and placing spacing blocks between the core and mesh;

d. installing each wall module by connecting the joist of each wall module to at least one of the metal member projecting outward from the footing and interconnecting the module joists of the wall and ceiling modules to define a self-supporting building frame; and

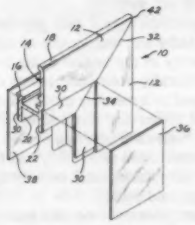
e. applying wet concrete around the mesh and completely surrounding the core and the joists and allowing same to cure.

4,454,703

SOLAR PANEL

Edward R. Sitzler, and Fred W. Moore, both of Louisville, Ky., assignors to Solar Structures Corp., Louisville, Ky.

Filed Nov. 12, 1981, Ser. No. 320,350
Int. Cl.³ A47G *1/00*
U.S. Cl. 52—788 **5 Claims**



1. A double pane solar panel comprising an outer, rectangular box-like frame formed of separate side elements by an elongated H-shaped member in transverse cross section, said member having a pair of generally parallel legs or flanges that are inwardly directed of the frame, at least one surface of each said inward flanges being furnished with a double contact pressure-sensitive adhesive tape having a width greater than ¼ inch and less than 1 inch, and a pane of transparent material being sealed around its peripheral edge into engagement with the adhesive tape on each of the pair of parallel flanges for forming a double pane solar panel that is substantially water-tight under atmospheric conditions, the said rectangular outer frame has one of its outermost legs shortened and the frame has mitered joint corners, the underside surface of the mitered joints of the longer outermost leg being covered with weather sealant to render that area substantially water-tight, the said double contact adhesive tape being applied to the flanges of the H-shaped member in its uncut raw form prior to the time the H-shaped member is cut to lengths with mitered joint corners so that the ends of the tapes are likewise mitered and fit together with a butt joint, the sealing action between the double contact adhesive tapes and the two transparent panes serving as a sufficient fastening means holding the separate side elements of the outer frame together.

4,454,704

HEAT CONTROL SYSTEM FOR PACKAGING MACHINE

John E. Ullman, Huntingdon Valley, Pa., assignor to The Mead Corporation, Atlanta, Ga.

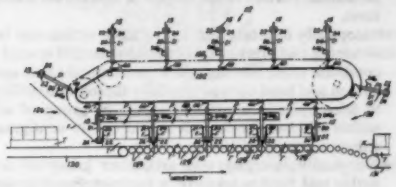
Filed Nov. 18, 1981, Ser. No. 322,443
Int. Cl.³ B65B *57/06*
U.S. Cl. 53—76 **13 Claims**

1. In apparatus for packaging articles in a tray by applying a film of thermoplastic material over the articles in the tray including a plurality of electrically operated heating units successively moving along a prescribed endless path and adapted to captivate each tray and the film over the articles in the tray between adjacent heating units as the heating units move along a prescribed portion of the prescribed path to press the film against opposite sides of the tray and heat the film to a temperature to cause the film to bond to the tray, the improvement comprising:

temperature control means for continuously powering each of said heating units while said heating units move around said endless path and for individually controlling the temperature of said heating units;

detection means for detecting when each of said heating units is in position to press the film against the tray;

timing means operatively connected to said temperature control means and said detection means, said timing means being activated when said detection means detects that said heating unit is in position to press the film against the



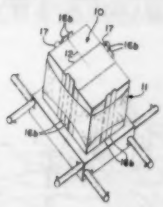
tray and deactivated when said detection means detects that said heating unit is out of position to press the film against the tray, said timing causing said temperature control means to lower the temperature of said heating unit from a prescribed higher welding temperature sufficient to bond the film to the tray to a prescribed lower holding temperature to prevent deterioration of the film after said timing means has been activated for a prescribed period of time and said timing means causing said temperature control means to raise the temperature of said heating unit back to said prescribed higher welding temperature when said timing means is deactivated.

4,454,705

PACKAGING METHOD

Edward L. Benno, Rte. 1, Box 198, Grayslake, Ill. 60030

Filed Mar. 6, 1981, Ser. No. 241,358
Int. Cl.³ B65B *13/02, 27/04*
U.S. Cl. 53—399 **5 Claims**



1. A packaging method for an article or group of articles in which the package produced comprises said article or group of articles encircled by a band and in which the article or group of articles has at least three corner configurations extending along generally straight lines laterally spaced apart and axially directed of the area encircled by said band and in which the sides of the article between said at least three corner configurations extend for purposes of said packaging method entirely in flat planes, comprising the steps of:

providing a circumferentially continuous band of substantially uniform thickness and of a resilient elastic plastics material having the property of substantially immediate recovery upon being stretched to any degree below the elastic limit thereof at normal ambient temperatures,

providing said band in an initial axial length sufficient to cover at least a substantial portion of the lengths of said

corner configurations of said article or group of articles when encircled by said band,

providing said band with an initial circumferential dimension sufficiently less than the circumferential dimension about said corner configurations to produce a stretched condition of said band a substantial portion of which approaches said elastic limit when said band encircles said article or group of articles about said corner configurations to produce said package,

providing at least one substantially straight and rigid arm adjacent each corner configuration of said article, each arm of a length at least as long as the lengths of said substantial portion of the lengths of said corner configurations,

telescopically inserting said arms axially within said band,

maintaining said arms in a substantially parallel spaced apart condition while moving said arms in straight lines apart to stretch said band circumferentially thereof and sufficiently to telescopically insert said article or group of articles within said band with each of said corner configurations adjacent one of said arms,

telescopically inserting said article or group of articles within said band as set forth in the immediately preceding step,

moving each of said arms at a speed substantially less than the recovery rate of said band only in a single flat plane parallel to a side adjacent to it and laterally away from and in a direction relative to the adjacent corner configuration a distance sufficient to allow substantially complete recovery and contraction of said band and substantially completely transfer said stretched band to stretched engagement about said corner configurations and encircling said article or group of articles with substantially no tension forces of said band on said arms, and

thereafter moving each of said arms in the flat plane parallel to its adjacent side and relative to said band to remove said arms from said band in an axial direction of said band while maintaining said substantially complete contraction of said band to produce said package.

4,454,706

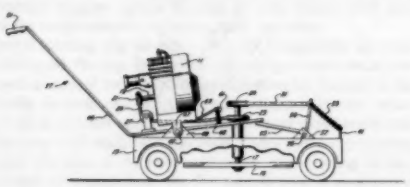
POWER MOWER WITH BLADE-BRAKE CLUTCH

Joseph S. Geeck, III, 6355 Jefferson Hwy., Harahan, La. 70123

Continuation-in-part of Ser. No. 358,656, Mar. 16, 1982, abandoned. This application Aug. 27, 1982, Ser. No. 412,132

Int. Cl.³ A01D *69/08, 69/10*

U.S. Cl. 56—11.3 **35 Claims**



1. In a walk behind rotary power mower comprising an engine, rotatable grass cutting means, and rotatable power transmission means operatively connecting the engine with the rotatable grass cutting means to cause rotation thereof, the improvement wherein said mower further includes:

(a) means for disconnecting said power transmission means;

(b) braking means for stopping rotation of said cutting means, said braking means comprising

(i) a pulley operatively connected with said grass cutting means, and

(ii) a belt adapted to be brought into frictional engagement with said pulley but fixed so that it cannot rotate with the pulley, the belt being adapted to stop rotation of the pulley;

(c) means causing said belt to be brought into frictional engagement with said pulley concurrently with the disconnection of said power transmission means;

(d) a handle comprising a generally horizontal segment and an upwardly and rearwardly extending segment adapted to be grasped at its upper portion by the operator, said handle being pivotally mounted to the mower at laterally positioned points of rotation intermediate the length of said generally horizontal segment so that

(i) when said handle is pivoted into a forward position on the mower by the application of forward pressure upon said handle, said power transmission means operatively connect the engine with said grass cutting means, and

(ii) when said handle is pivoted into a rearward position on said mower, said power transmission means is disconnected and concurrently said belt is brought into frictional engagement with said pulley thereby stopping rotation of said grass cutting means;

the mower being further characterized in that

(e) said pulley is mounted on an upstanding shaft to which said cutting means are secured;

(f) the engine is mounted above said generally horizontal segment of the handle and rearwardly of said pulley, with the center of gravity of the engine being between and to the rear of said laterally positioned points of rotation;

(g) said belt is secured to a member mounted on said mower forwardly of said pulley and adapted to pivot forwardly and backwardly, backward pivoting of said member causing said belt to loosen from said pulley and forward pivoting of said member causing said belt to tighten on and frictionally engage said pulley;

(h) tension means are positioned on said mower to continuously apply a force upon said member tending to cause said member to pivot forwardly;

(i) said transmission means comprise a belt and a pulley system for rotating said shaft and said cutting means; and

(j) said member includes a rearwardly projecting lever arm engageable by the forward end portion of said generally horizontal segment of the handle so that when said handle is pivoted into a forward position on the mower by the application of forward pressure upon said handle

(i) said belt and pulley system is tightened by displacement of the engine relative to said belt and pulley system whereby said shaft and said cutting means are rotated and

(ii) the forward end portion of said generally horizontal segment of the handle applies a force upon said lever arm in excess of the opposing force continuously applied upon said member by said tension means whereby said member is caused to pivot backwardly to cause said first-named belt to be frictionally disengaged from the pulley of said braking means.

4,454,707

CROP RETAINER UNIT FOR A BALER

Ronald J. Ronayne, and Leroy Kluver, both of Celina, Ohio, assignors to The Paul Revere Corporation, Greenwich, Conn.

Filed Sep. 27, 1982, Ser. No. 423,633

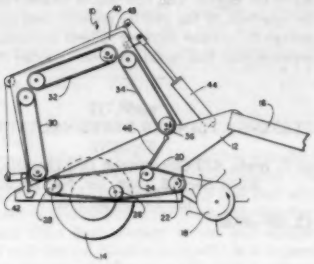
Int. Cl.³ A01D *39/00*

U.S. Cl. 56—341 **5 Claims**

1. In combination with a tractor drawn round bale forming machine of the type wherein there is a bale forming chamber of fixed size having a horizontal axis and including a wheel mounted main frame, a pick-up reel across the lower front, a bottom conveyor incorporating side-by-side belts entrained on transversely extending rollers rotatably mounted in the main frame, there being means for driving both the bottom conveyor and the pick-up reel, the upper part of the machine including a subframe on which is mounted a plurality of serially arranged conveyors which enclose and generally define the circumferential periphery of the baling chamber, there being a space between the last of the serially arranged conveyor elements and the uppermost surface of the bottom con-

veyor forming thereby an inlet throat to the baling chamber; the improvement comprising:

a crop retainer unit mounted in said entrance throat, said gate including a shaft spanning the length of said chamber at a location directly below and adjacent to the downstream end of the last of said serially arranged conveyors, said shaft having secured thereto at spaced intervals one end of each of a plurality of rod-like elements, all elements



being positioned in line and extending radially outward from said shaft in the same direction, said shaft being mounted for rotation in the sidewalls of said machine, rotational motion of said shaft being restricted so that the second ends of said elements can readily swing inward into the baling chamber but motion in the outward direction is stopped at the angle wherein the elements are tangentially in line with the circumferential periphery of the baling chamber.

4,454,708

WIRE ROPE AND METHOD OF MAKING SAME

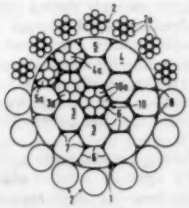
Roland Verreet, Kirkel, Fed. Rep. of Germany, assignor to Drahtseilwerk Saar GmbH, Limbach, Fed. Rep. of Germany

Filed Apr. 28, 1982, Ser. No. 372,754

Claims priority, application Fed. Rep. of Germany, May 2, 1981, 3117452

Int. Cl.³ D07B *1/00, 1/06, 5/00*

U.S. Cl. 57—215 **6 Claims**



1. A wire rope of at least substantially non-twistable character, comprising a densified wire rope center and an outer layer comprising undensified strands which surround the center, said center including a plurality of neighboring strands and at least some strands of said center having an other then circular cross-sectional outline and facetted peripheral surfaces, at least some strands of said center having wires of other than circular cross-sectional outline and the facets of neighboring strands in the center abutting against each other, at least some strands of said center being twisted in one direction and the strands of said outer layer being twisted in the opposite direction.

4,454,709

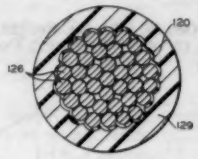
METHOD OF FORMING CONCENTRIC CABLE LAYER AND ARTICLE FORMED

Ralph E. Wahl, Trumbull, Conn., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 12, 1982, Ser. No. 357,358

Int. Cl.³ D07B *7/14;* H01B *9/02, 7/34, 13/22*

U.S. Cl. 57—223 **14 Claims**



1. A method of forming a cable comprising:

providing a multistrand inner conductor,

providing a elongated unsupported semiconducting tape of a width slightly larger than the circumference of the multistrand conductor,

passing the multistrand conductor through an extruder head to extrude an outer insulation layer thereon, and

wrapping said unsupported semiconducting tape about the multistrand conductor prior to its introduction into the extruder head.

5. A cable structure comprising:

a stranded inner conductor,

a layer of a semiconducting tape over the stranded conductor, the outer surface of which has irregularities conforming generally to the strands of said inner conductor, and

an outer insulation layer over said layer of pliable material.

4,454,710

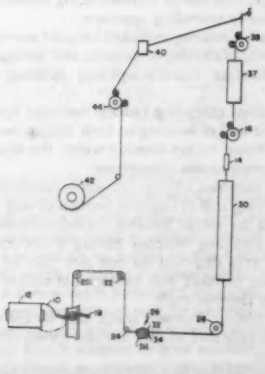
BALLOON CONTROL FOR YARN TEXTURING MACHINE

Charles E. Warner, and William J. Schroder, both of Spartanburg, S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Oct. 18, 1982, Ser. No. 434,899

Int. Cl.³ D01H *7/18;* D02G *1/02;* B65H *49/00, 57/22*

U.S. Cl. 57—354 **4 Claims**



1. Method to produce a false twisted, continuous multifilament synthetic yarn comprising the steps of: supplying a continuous multifilament yarn from a supply package through a heater to a false twisting device, interrupting the balloon path of the yarn supplied to the false twisting device as it is supplied from the supply package, intermittently and randomly varying

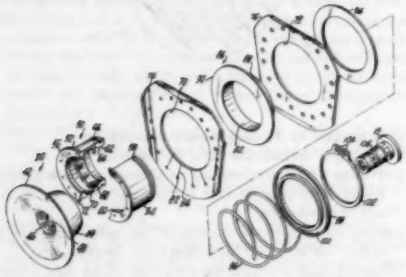
the supply of yarn to the false twisting device, driving the false twist device at a speed to produce a twist multiple between 250 and 450 in the multifilament yarn, allowing the yarn to be set after false twisting and taking up the false twisted yarn.

4,454,711

SELF-ALIGNING FUEL NOZZLE ASSEMBLY

Avi Ben-Porat, Norwalk, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Oct. 29, 1981, Ser. No. 316,326
Int. Cl.³ F02C 7/20; F02G 3/00
U.S. Cl. 60—39.32 **9 Claims**



1. A self-aligning fuel nozzle assembly mounted within the entrance opening in the combustor liner of a combustion chamber assembly of a gas turbine engine for maintaining alignment of a swirler and a fuel nozzle throughout changes in the relative position of the combustor liner and the combustor housing during operation of the engine comprising:

inner and outer mounting plates disposed on either side of the combustor liner and extending radially into said entrance opening leading to the combustion chamber to form an annular slot between said plates; each of said plates having a centrally located, axially aligned, aperture;

a sleeve member including an elongated cylindrical portion mounted in the aligned apertures of the mounting plates and having a radially extending lip portion adapted to slidably engage the annular slot formed between the mounting plates to retain said sleeve member in a manner permitting motion of the sleeve member in the plane of said flange, said sleeve member being constructed with a longitudinally extending aperture;

a tubular socket housing mounted for axial movement within the aperture of the sleeve member and having a longitudinally extending interior opening defining a spherical socket;

retention means extending radially outward from the distal end of the socket housing to limit sliding motion thereof and retain said socket housing within the sleeve member, said retention means comprising:

a washer disposed adjacent to said second mounting plate and having said cylindrical portion of said sleeve member and the socket housing extending therethrough;

a spring retaining member having a circumferential recessed area disposed on one side thereof, said spring retaining member also having said socket housing extending therethrough;

a helical spring disposed about said socket housing and intermediate said washer and said spring retaining member; and

a split spring washer disposed adjacent the opposed side of said spring retaining member and secured to said socket housing, said split spring washer being operative to maintain the elements of the self-aligning fuel nozzle assembly in a single unit and to mount said assembly to the combustor liner of the engine;

a swirler member constructed with an elongated body having a radially extending swirler portion extending from one end and a spherically shaped ball portion extending from the opposite end thereof, said swirler member being mounted in the socket housing with its ball portion engaging the spherical socket for movement in a ball and socket relation; said elongated body portion having an axially extending aperture adapted to receive the fuel nozzle; and

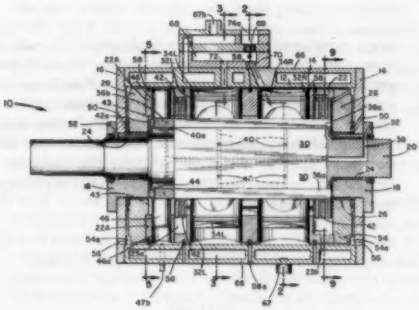
a fuel nozzle including an elongated cylindrical body extending from and mounted at one end to the combustor housing of the engine, said fuel nozzle slidably received within the aperture of the swirler member and having means to engage the swirler member to limit the relative movement between said fuel nozzle and said swirler member.

4,454,712

ROTATING CYLINDER EXTERNAL COMBUSTION ENGINE

Everett F. Irwin, 430 Orangewood Dr., Dunedin, Fla. 33528

Filed Dec. 15, 1980, Ser. No. 216,629
Int. Cl.³ F02G 3/02
U.S. Cl. 60—39.63 **10 Claims**



1. In a rotary-operated gaseous fluid displacement device for use as an external combustion engine and embodying a stationary housing having fluid intake and discharge ports, and embodying a conjointly rotatable eccentrically disposed piston-supporting rotary shaft and radial-piston-chambered block components within the housing, said rotary shaft disposed eccentrically within an open axial aperture provided within said rotary block component, and having pistons movable between top dead center (TDC) and bottom dead center (BDC) positions respectively during operation, said housing having a cylindrically-shaped internal peripheral wall and opposed end walls disposed transversely to the axis of the cylindrical wall, means for introducing into and igniting a combustible fuel mixture solely within a combustion chamber having communication with the interior of said housing, said combustion chamber mounted externally on said housing, the improvement wherein:

(a) said shaft having a medial portion with at least one pair of diametrically opposed parallel planar surfaces spaced equidistantly from the shaft axis, said planar surfaces disposed for operative reciprocating engagement by the correspondingly disposed pistons;

(b) said rotary block having first, second and third axially spaced banks of corresponding even-numbered circumferentially spaced radial piston chambers, said second one of said banks communicating directly with a fluid discharge port of said externally mounted combustion chamber, said second and third banks being dedicated to a power expansion and exhaust function and the first of said banks being dedicated to the compression of air;

(c) a piston complementally and slidably disposed within each of said diametrically opposed piston chambers and respectively being fully radially extended and radially

retracted when in the respective TDC and BDC positions attendant piston travel; said travel constituting sequential 180 degree cycles of operation for imparting operative driving rotation to said shaft and conjointly to said rotatable block components;

(d) valving means for interconnecting said externally mounted combustion chamber with the interior of said housing, said valving means including fluid flow transfer passage means alternately communicating in timed relation with said first and second banks of piston chambers near the TDC positions to effect operation of the engine;

(e) said corresponding pistons of each bank being longitudinally aligned and fixedly connected to elongated piston-mounting base plates, said base plates each having a generally planar portion and constituting a means for providing said operative reciprocating engagement between said pistons and said corresponding planar surfaces of said rotatable shaft;

(f) said device further including means for introducing a combustible fluid mixture fuel into said external combustion chamber, and means for igniting said fuel whereby the combustion gases are directed from said chamber via a part of said fluid flow passage means and against said pistons of said second bank individually in a sequentially continuous manner constituting a 180 degree power cycle to impart continuous rotary drive to said shaft;

(g) secondary fluid transfer passage means including at least a first conduit which interconnects said pistons and cylinders of said second bank at a point approximately midway of its power cycle and operatively connecting with the pistons and cylinders of said third bank at a point to exert positive supplemental driving pressure as they pass top dead center position and commence their corresponding power cycle;

(h) each of said second and third banks having fluid discharge ports for exhausting spent combusted gases; and

(i) said secondary fluid transfer passage means including a second conduit connected generally in parallel to said first conduit, but interconnecting said second bank commencing at a point substantially beyond said midway point of its power cycle, and operatively connecting with said adjacent third bank at a point approximately midway of said corresponding supplemental power cycle.

4,454,713

PULSE WIDTH MODULATED FUEL METERING SYSTEM

Gene A. Meyer, West Simsbury, and Robert E. Peck, Prospect, both of Conn., assignors to Chandler Evans Inc., West Hartford, Conn.

Filed Jun. 4, 1981, Ser. No. 270,484

Int. Cl.³ F02C 9/28

U.S. Cl. 60—39.281 **2 Claims**

1. In a fuel metering system for a gas turbine engine having a low pressure drop fuel vaporizing system:

a centrifugal pump in driving connection with the engine such that there is correspondence between the speed of the engine and the speed of the pump;

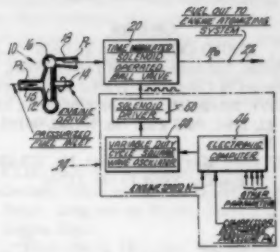
an inlet conduit operatively connected to the pump for delivering fuel thereto;

a discharge conduit operatively connected to the pump for receiving fuel discharged thereby;

means for supplying the inlet conduit with fuel at a given absolute pressure;

a metering valve having: an inlet; an orifice which receives flow from the inlet; an outlet which receives flow from the orifice; a rapidly displaceable element adapted to periodically choke the orifice; and a solenoid for rapidly displacing the element between a position in which the orifice is choked and a position in which the orifice is open, the valve inlet being fluidly connected to the discharge conduit and the valve outlet being fluidly connected to the fuel vaporizing system such that when the orifice is choked, the discharge conduit is deadheaded whereby no flow traverses the valve and when the orifice is open, flow traverses the valve and proceeds to the vaporizing system, the pressure differential across the valve increasing as engine speed increases; and

an electronic control adapted to sense selected engine parameters, compute a required fuel flow, compute the pressure differential across the metering valve and generate voltage pulses having a duty cycle commensurate with the required fuel flow, the electronic control being operatively connected to the solenoid such that the generated voltage pulses are applied thereto.



4,454,714

EXHAUST GAS CLEANING DEVICE FOR INTERNAL COMBUSTION ENGINES

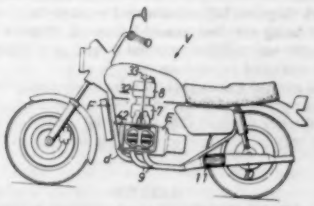
Yasuo Ikenoya, Kawagoe; Makoto Hirano, Asaka, and Seishi Miura, Shiki, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 24, 1981, Ser. No. 334,222

Claims priority, application Japan, Dec. 26, 1980, 55-191631[U]

Int. Cl.³ F01N 3/30

U.S. Cl. 60—293 **15 Claims**



1. An exhaust gas cleaning device for an internal combustion engine having a cylinder block including a cylinder head and a cylinder head cover on said cylinder head, said exhaust gas cleaning device comprising: an exhaust system having an exhaust port, a secondary air supply system having an upstream secondary air supply passage communicating with the atmosphere and a downstream secondary air supply passage communicating with said exhaust port for supplying secondary air to said exhaust system, and a reed valve device in said secondary air supply system adapted to open and close in response to pulsations of exhaust gas pressure in said exhaust system during operation of said engine, said reed valve device including: a valve housing having a housing structure formed on the cylinder head cover of the engine and a cover member secured to said housing structure, said cover member including a plurality of projections projecting inwardly from the inner surface thereof; and a reed valve member clamingly held between said

housing structure and said projections of said cover member, said reed valve member dividing a space provided in said housing into an upstream chamber connected to said upstream secondary air supply passage and a downstream chamber connected to said downstream secondary air passage, the planar area of said upstream chamber facing said reed valve member being greater than the area of said reed valve member.

4,454,715

FLUID CONTROL SYSTEM

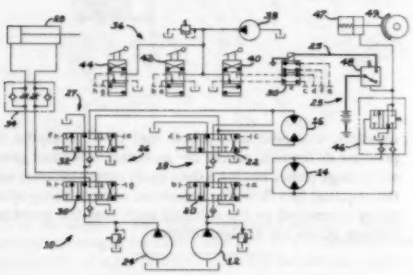
Thomas P. Muller, Montgomery, and Leon A. Wirt, Joliet, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/00689, 371 Date May 22, 1981, 102(e) Date May 22, 1981, PCT Pub. No. WO82/04105, PCT Pub. Date Nov. 25, 1982

PCT Filed May 22, 1981, Ser. No. 278,493

Int. Cl.³ F15B *13/06, 13/09*

U.S. Cl. 60—421 **5 Claims**



1. A fluid control system (10) comprising:

first and second sources of pressurized fluid (12,24);

first, second, and third work elements (14,16,28);

first control means (18) for selectively controllably delivering pressurized fluid from said first source (12) to each of said first and second work elements (14,16);

first signal means (23) for transmitting a signal (25) only in response to pressurized fluid being delivered to the first work element (14), said first signal means (23) including a pressure swtch (48) in fluid communication with said first work element (14) and actuated in response to pressurized fluid being supplied to said first work element (14), and a selector valve (50) connected to said pressure switch (48) and activated by said signal (25); and

second control means (26) for selectively controllably delivering pressurized fluid from said second source (24) to the third work element (28) and to the second work element (16) only in response to receiving said signal (25).

4,454,716

LOAD SENSE HYDROSTATIC VEHICLE STEERING SYSTEM

Jim L. Rau, Lafayette, Ind., assignor to TRW Inc., Cleveland, Ohio

Filed Feb. 3, 1982, Ser. No. 345,546

Int. Cl.³ F16D *31/02*

U.S. Cl. 60—422 **4 Claims**

1. A hydrostatic load sense vehicle steering system comprising,

a source of fluid,

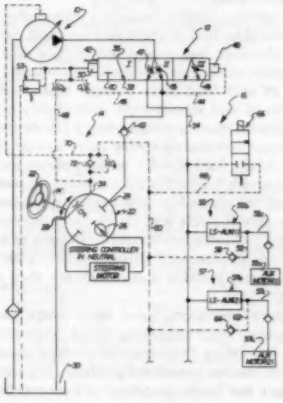
a steering circuit including a steering motor and a hydrostatic steering controller which receives fluid from the source and directs fluid to the steering motor to effect steering,

an auxiliary circuit for controlling operation of one or more auxiliary motors,

fluid control means, which responds to fluid pressures in a pilot circuit, for communicating fluid to the steering circuit to satisfy the needs of the steering circuit, and for directing excess fluid flow, beyond that needed in the steering circuit, to the auxiliary circuit, said fluid control means including conduit means for directing fluid to the steering circuit,

said steering controller having a control valve which is biased to a neutral position, and which responds to a steering effort by moving away from the neutral position to direct fluid to the steering motor to effect steering of the vehicle, said controller having a load sense port for receiving pilot fluid which is used to control fluid pressures in the pilot circuit,

said pilot circuit including a first pilot conduit branching from said conduit means outside the controller, said first pilot conudit (a) communicating with said load sense port of the controller, and (b) communicating a pressure signal



to said fluid control means for controlling said fluid control means in accordance with the condition of the steering circuit, a second pilot conduit connected with the auxiliary circuit and communicating a pressure signal in accordance with the condition of said auxiliary circuit to said fluid control means, said second pilot conduit also communicating through a bleed orifice with the load sense port of the controller,

said controller directing the pilot fluid from its load sense port to a reservoir when the control valve is in the neutral position so that the controller bleeds the second pilot conduit to the reservoir, said control valve restricting the flow of pilot flow to the reservoir as it moves away from the neutral position, to provide pressure signals in said first and second conduits indicating a need for flow and pressure in the steering circuit.

4,454,717

RESERVOIR FOR A VEHICLE POWER STEERING SYSTEM

Philip M. Wade, and Robert T. Williams, both of Huddersfield, England, assignors to David Brown Tractors Ltd., Huddersfield, England

Filed Nov. 3, 1980, Ser. No. 203,198

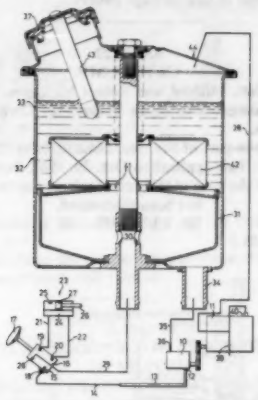
Claims priority, application United Kingdom, Nov. 17, 1979, 7939867

Int. Cl.³ F16D *31/02*

U.S. Cl. 60—453 **8 Claims**

1. A reservoir for a power steering system, for a vehicle, of the type including an engine-driven pump circulating oil through a steering-wheel-operated hydrostatic steering unit which communicates with a double-acting hydraulic piston-and-cylinder assembly and can function in known manner as a

manually-operated emergency steering pump if its supply of oil from the engine-driven pump fails, the reservoir being disposed above the hydrostatic steering unit and adapted to communicate with a port of said unit and with the inlet of the engine-driven pump and comprising an outer casing adapted to breathe air at its upper end and having an outlet at its lower



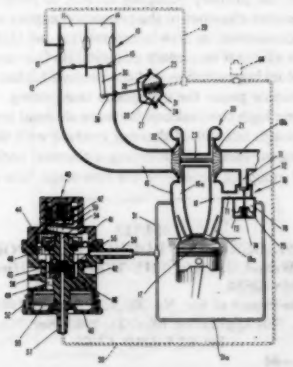
end adapted to communicate with said inlet, and an inner casing for retaining oil for emergency operation having a port at its lower end adapted to be connected in reversible flow communication with said port of said unit and an oil outlet at its upper end communicating with the interior of the outer casing.

4,454,718

SAFETY CONTROL SYSTEM FOR A TURBOCHARGED ENGINE

Naoji Sakakibara, Chiryu, and Isshi Nomura, Aichi, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 2, 1982, Ser. No. 364,873
Claims priority, application Japan, Apr. 6, 1981, 56-052118
Int. Cl.³ F02B *37/12*
U.S. Cl. 60—600 **6 Claims**



1. In an internal combustion engine including a carburetor having primary and secondary barrels, an intake manifold, an exhaust manifold, and turbocharger having a turbine disposed in the exhaust manifold driving a compressor disposed in the intake manifold, a safety control system comprising:

(a) exhaust relief valve means responsive to turbocharger output fluid pressure for relieving exhaust gas pressure in said exhaust manifold upstream of said turbine when said turbocharger output fluid pressure exceeds a predetermined level;

(b) vacuum motor means normally responsive to vacuum created in said primary barrel for mechanically controlling fluid flow through said secondary barrel; and

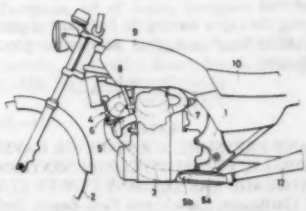
(c) vacuum control valve means responsive to turbocharger output fluid pressure for communicating air at atmospheric pressure to said vacuum motor means to reduce fluid flow through said secondary barrel when said turbocharger output fluid pressure exceeds a predetermined value which is higher than said predetermined level.

4,454,719

EXHAUST APPARATUS IN VEHICLE

Takashi Shinozaki, Tokorozawa, and Masatoshi Suzuki, Urawa, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1981, Ser. No. 269,983
Claims priority, application Japan, Jun. 24, 1980, 55-84585
Int. Cl.³ F02B *37/00*
U.S. Cl. 60—605 **4 Claims**



1. An exhaust apparatus for a vehicle having an internal combustion engine mounted on a vehicle body, wherein plural cylinders are arranged laterally with respect to the driving direction of the vehicle and on both sides of the engine center line, said engine including an exhaust turbine coupled to an exhaust passage of said engine and a compressor coupled to an intake passage of said engine, said exhaust apparatus comprising first exhaust passage means including a single pipe having one end coupled to an outlet opening of said exhaust turbine, a first muffler coupled to the other end of said pipe, the pipe and the first muffler being coupled together at a position near a rear portion of the engine, diverging exhaust passage means having one end coupled to said first exhaust passage means at a point which is below a rear portion of the engine and is near the foregoing coupling between the pipe and said first muffler, and a second muffler coupled to the other end of said diverging exhaust passage means, said pipe being substantially the same diameter from its coupling to the outlet opening to its coupling to the first muffler,

said engine having separate exhaust pipes leading from each of the cylinders and connected together at a position just below an inlet opening of the exhaust turbine,

said supercharger being located within the lateral width of the engine cylinders and extended in front of the engine along the driving direction of the vehicle.

4,454,720

HEAT PUMP

Herman M. Leibowitz, Schenectady, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Mar. 22, 1982, Ser. No. 360,779
Int. Cl.³ F01K *17/00*
U.S. Cl. 60—648 **12 Claims**

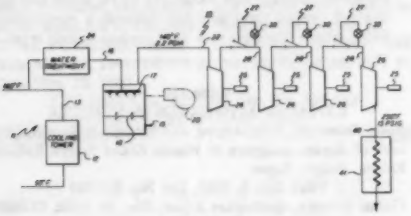
1. The method of recovering energy from an industrial

process containing a heated waste fluid that includes the steps of:

removing a portion of said heated waste fluid from the high temperature side of said process;

flashing at least a portion of the removed heated waste fluid to a vapor;

passing said vapor in series through a multistage compressor wherein the vapor is superheated within each stage;



desuperheating the vapor leaving each compressor stage to a dry saturated state by spraying a liquid coolant into said vapor; and

employing the vapor leaving the last stage of compression to provide thermal energy to compatible process related equipment.

4,454,721

CONSTANT-PRESSURE AIR-STORAGE CAVERN WITH HYDRALIC PRESSURE COMPENSATION FOR AIR-STORAGE GAS TURBINE POWER STATIONS

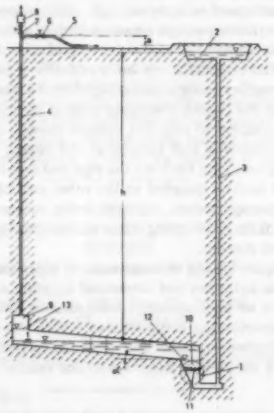
Reinhard Hürlimann, Zurich, and Paul Zaugg, Baden, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Sep. 13, 1982, Ser. No. 417,635

Claims priority, application Switzerland, Sep. 18, 1981, 6040/81

Int. Cl.³ F02C *3/00*

U.S. Cl. 60—659 **5 Claims**



1. A constant-pressure air-storage cavern with hydraulic pressure compensation for air-storage gas turbine power stations utilizing an equalizing basin located above ground and comprising:

air feeder means for feeding air to gas turbines of said gas turbine power stations;

water tunnel means for forming a water seal and for connecting the storage cavern with said equalizing basin; and

air riser means for connecting the storage cavern with the air feeder means wherein a floor portion and a roof portion of the storage cavern are inclined at an acute angle with respect to horizontal for minimizing adsorption of air in fluid stored in said storage cavern.

4,454,722

CRYOPUMP

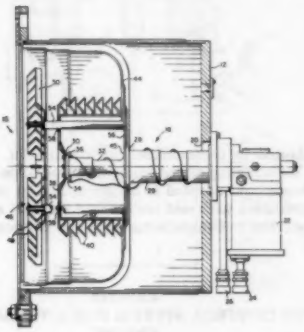
Allen J. Bartlett, Milford, and Robert M. Lewis, Hudson, both of Mass., assignors to Helix Technology Corporation, Waltham, Mass.

Continuation-in-part of Ser. No. 266,186, May 22, 1981, Pat. No. 4,356,701. This application Oct. 29, 1982, Ser. No. 437,560

The portion of the term of this patent subsequent to Nov. 2, 1999, has been disclaimed.

Int. Cl.³ B01D *8/00*

U.S. Cl. 62—55.5 **9 Claims**



1. A cryopump comprising a two stage refrigerator with a heat sink at the cold end of each stage, a primary pumping surface in close thermal contact with the second, coldest stage heat sink, a radiation shield spaced from and surrounding the primary pumping surface and in close thermal contact with the first stage heat sink, the radiation shield being sufficiently spaced from the primary pumping surface to permit gas flow from the vacuum chamber to the primary pumping surface, the gas to be condensed at low temperatures on that pumping surface, and a frontal secondary pumping surface and radiation shield for blocking radiation and condensing higher condensation temperature gases, the cryopump comprising:

at least one high thermal conductance thermal strut extending through but out of thermal contact with the primary pumping surface and providing a thermal path from the frontal pumping surface to the first stage heat sink.

4,454,723

REFRIGERATED PRODUCE TRANSPORT

George E. Weasel, Jr., c/o NHY-TEMP, Inc., Hwy. 65, McClure, Ohio 43534

Continuation-in-part of Ser. No. 305,952, Sep. 28, 1981, Pat. No. 4,406,131. This application Mar. 21, 1983, Ser. No. 477,728

Int. Cl.³ F25D *17/02*

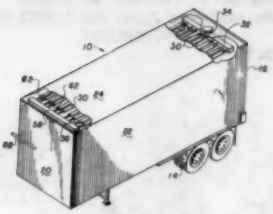
U.S. Cl. 62—64 **7 Claims**

1. The method of processing perishable vegetation comprising the steps of:

a. placing the vegetation in a substantial air-tight container at a first location,

b. flushing the vegetation as soon as possible after placing in the container with cold water at as low a temperature as the vegetation will tolerate, while simultaneously

c. replacing the air in the container with an oxygen free atmosphere, then
d. transporting the container to a second location, and
e. during transportation



i. maintaining the atmosphere in the container oxygen free, and
ii. maintaining the temperature in the container as low as the vegetation will tolerate.

4,454,724

AQUEOUS ABSORBENT FOR ABSORPTION CYCLE HEAT PUMP

Donald C. Erickson, 1704 S. Harbor La., Annapolis, Md. 21401

Filed Sep. 29, 1982, Ser. No. 428,483
Int. Cl.³ F25B *15/00*
U.S. Cl. 62—112 **8 Claims**

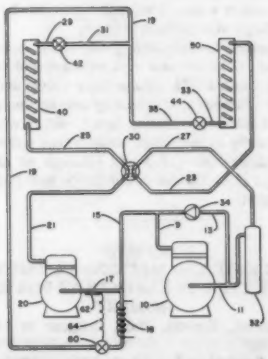
1. An aqueous absorbent solution comprised of water and a nonaqueous component wherein the nonaqueous component comprises at least 35 mole percent $LiNO_3$ and at least 35 mole percent alkali metal nitrite, and wherein water comprises between 2 and 50 weight percent of the solution.

4,454,725

METHOD AND APPARATUS FOR INTEGRATING A SUPPLEMENTAL HEAT SOURCE WITH STAGED COMPRESSORS IN A HEAT PUMP

Peter L. Cann, Canastota, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Sep. 29, 1982, Ser. No. 427,406
Int. Cl.³ F25B *13/00*
U.S. Cl. 62—117 **7 Claims**



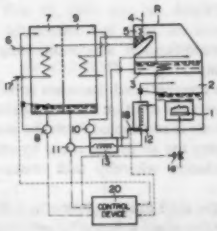
1. A reversible refrigeration circuit which comprises:
a first heat exchanger;
a second heat exchanger;
a common line connecting the heat exchangers to each other;
reversing means;
a low stage compressor adapted to receive gaseous refrigerant through the reversing means from the one of said heat exchangers serving as an evaporator, said compressor increasing the temperature and pressure of said gaseous refrigerant;
a high stage compressor adapted to receive gaseous refrigerant from the low stage compressor and to further increase the temperature and pressure of said refrigerant, said refrigerant being discharged through the reversing means to the one of said heat exchangers serving as a condenser;
an interconnecting line connecting the discharge from the low stage compressor to the inlet to the high stage compressor;
a conduit connecting the common line with the interconnecting line and control means for regulating the flow of liquid refrigerant through the conduit; and
heating means for supplying thermal energy to the refrigerant flowing through the conduit to the high stage compressor.

4,454,726

CONTROL DEVICE OF ABSORPTION TYPE COLD AND WARM WATER SYSTEM

Yozo Hibino; Kohji Kamejima, both of Ibaraki, and Yasuaki Nara, Tsuchiura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 28, 1982, Ser. No. 454,029
Claims priority, application Japan, Jan. 6, 1982, 57-318; Jan. 6, 1982, 57-319; May 28, 1982, 57-89644
Int. Cl.³ F25B *15/00*
U.S. Cl. 62—148 **8 Claims**



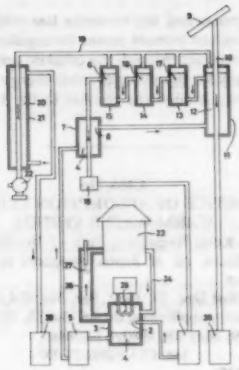
1. A control device for controlling a heat source of an absorption type cold and warm water system to thereby control the temperature of cold water and warm water produced by the cold and warm water system to a predetermined value, comprising:
a cold water and warm water temperature sensor for sensing the temperature of the cold water and warm water in a cold water and warm water tube produced by the cold and warm water system;
a solution temperature sensor for sensing the temperature of a concentrated solution in the cold and warm water system, and
a control section operative to effect control of the heat source in accordance with a signal produced as a result of the sensing performed by said cold water and warm water temperature sensor to keep the temperature of the cold water and warm water at a predetermined level and to produce operation signals for a refrigerant pump of an evaporator and a solution pump for feeding the solution to a generator under pressure in accordance with a drop and a rise in the temperature of the solution as sensed by said solution temperature sensor and a drop in the temperature of the cold water and a rise in the temperature of the warm water as sensed by said cold water and warm water temperature sensor after said heat source is turned off.

4,454,727

DEHUMIDIFICATION AIR-CONDITIONING METHOD WITH SOLAR HEAT

Soohei Suzuki, 1-12, Ebisu-cho, Gifu-shi, Japan (100)

PCT No. PCT/JP79/00279, 371 Date Jun. 30, 1981, 102(e) Date May 28, 1981, PCT Pub. No. WO81/01326, PCT Pub. Date May 14, 1981
PCT Filed Oct. 30, 1979, Ser. No. 269,055
Int. Cl.³ F25B 27/00
U.S. Cl. 62—235.1 7 Claims



1. A dehumidification air-conditioning method utilizing solar heat comprising:

supplying a concentrated desiccant solution from a concentrated desiccant solution tank to a dehumidification room to which air is conducted from the interior of a house;

dehumidifying the air in said room by utilizing said concentrated solution whereby said concentrated solution is diluted;

collecting the used dilute solution in a dilute solution tank;

pre-heating the dilute solution by utilizing a heat exchanger;

passing said pre-heated dilute solution through a low-temperature vacuum evaporation means for withdrawing moisture therefrom in order to acquire a mid-concentrated solution;

utilizing simultaneously solar heat and vacuum in said low-temperature vacuum evaporation means in order to acquire said mid-concentrated solution;

passing said mid-concentrated solution to a plurality of high-temperature vacuum evaporation means arranged in series for further withdrawing moisture from said mid-concentrated solution in order to acquire a concentrated solution;

utilizing sunlight heat reflected from light collecting mirrors on each of said high-temperature vacuum evaporation means in order to directly heat said high-temperature vacuum evaporation means to thereby acquire said concentrated solution;

applying a reduced pressure to said low-temperature vacuum evaporation means and to each of said plurality of high-temperature vacuum evaporation means by communicating a source of vacuum thereto;

passing said concentrated solution from said high-temperature vacuum evaporation means to said heat exchanger such that said concentrated solution is cooled in said heat exchanger; and

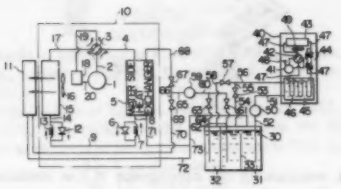
returning said concentrated solution to said concentrated desiccant solution tank.

4,454,728

AIR CONDITIONING SYSTEM

Masamichi Hanada, Shimizu, and Hirokiyo Terada, Shizuoka, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 11, 1983, Ser. No. 457,270
Claims priority, application Japan, Feb. 3, 1982, 57-14957
Int. Cl.³ F25B 7/00
U.S. Cl. 62—324.1 22 Claims



1. An air conditioning system comprising:

first line means for connecting a cold and heat accumulating tank to a water side heat exchanger of a chilling unit through a first pump to allow water to flow from a large volume tank section of the accumulating tank into the water side heat exchanger, said cold and heat accumulating tank including a small volume tank section, said small volume tank section and said large volume tank section accommodating water of different temperatures;

second line means for connecting an outlet end of said water side heat exchanger of said chilling unit to said cold and heat accumulating tank for returning to said large volume tank section through a first change-over valve;

third line means for connecting the outlet end of said water side heat exchanger of said chilling unit to said cold and heat accumulating tank for returning water to said small volume tank section through a second change-over valve;

fourth line means for connecting said cold and heat accumulating tank to a water side heat exchanger of a water-cooling type heat pump air conditioning unit to allow water in said large volume tank section to flow to said water side heat exchanger through a third change-over valve, a second pump, and a fourth change-over valve;

fifth line means for connecting an outlet end of said water side heat exchanger of said water-cooling type heat pump air conditioning unit to said cold and heat accumulating tank to return water from said water side heat exchanger to said large volume tank section;

sixth line means for connecting said small volume tank section of said cold and heat accumulating tank to said second pump through a fifth change-over valve; and

seventh line means for connecting said second pump to said cold and heat accumulating tank to return water from said second pump to said large volume tank section through a sixth change-over valve and through an ancillary heat exchanger in said water-cooling type heat pump air conditioning unit.

4,454,729

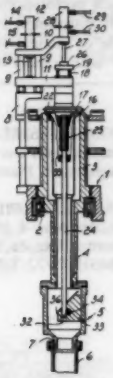
CIRCULAR KNITTING MACHINE OF THE CYLINDER AND DIAL TYPE, IN PARTICULAR FOR KNITTING HOSIERY

Francesco Lonati, Brescia, Italy, assignor to Lonati S.p.A., Brescia, Italy

Filed May 3, 1982, Ser. No. 373,950
Claims priority, application Italy, May 8, 1981, 21597 A/81
Int. Cl.³ D04B 9/06, 15/92
U.S. Cl. 66—28 8 Claims

1. A circular knitting machine of the cylinder and dial type, particularly for knitting hosiery, comprising a coupling means between the needle cylinder and the dial for rotation of said dial with said needle cylinder about a common axis, said cou-

pling means comprising a rod coaxial with said needle cylinder and said dial and rotatively connected to said dial and an entrainment element rotatively and axially rigid with said needle cylinder for rotatively connecting said rod with said needle cylinder, wherein said entrainment element extends



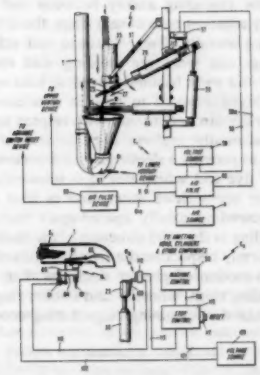
across said axis and said rod is axially shiftable with respect to said needle cylinder and said dial between a position of engagement with, and a position of disengagement from, said entrainment element while maintaining rotary engagement with said dial.

4,454,730

INTERRUPTER APPARATUS FOR HOSIERY KNITTING MACHINE

Clifton Gregory, Hickory, and Lester W. Campbell, Claremont, both of N.C., assignors to Marvel Specialty Company, Hickory, N.C.

Filed Aug. 17, 1981, Ser. No. 293,292
Int. Cl.³ D04B *15/92, 15/88, 35/10*
U.S. Cl. 66—149 S **9 Claims**



1. In a knitting machine having a separator for separating a tubular string into individual articles and an interrupter apparatus for said machine comprising

separator means operable to grasp an article for separation from the string,

means for moving said separator means to effect the separating operation,

means to transfer said articles after separation and defining a transfer path from the point of separation to a remote point,

an interrupter control circuit,

stop action switch means in said circuit responsive to the movement of said separator means between first and second operable positions,

advance switch means in said circuit positioned along the transfer path of articles for actuation in response to detection of an article being advanced to said remote point, said advance switch means including a microswitch and a pivotal actuator arm for said microswitch, said actuator arm being positioned along said transfer path and detent means for holding said arm in a tripped position when engaged by an article and a reset position, and further including reset means for positioning said arm in the reset position in readiness for the next article along said path, said reset means including a reset control circuit and cycle switch means responsive to the movement of said separator means to said second operable position prior to each separation cycle, and

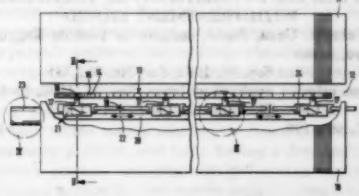
stop control means in said circuit for stopping the knitting machine operation only in response to both said stop action and advance means, whereby the machine is stopped only when said articles fail to be properly separated and advanced along said transfer path.

4,454,731

KNITTED FABRIC SPREADER DEVICE FOR FLAT KNITTING MACHINES

Ernst Goller, Reutlingen; Günther Kazmaier, St. Johanns-Ohne, and Hermann Schmodde, Albstadt, all of Fed. Rep. of Germany, assignors to H. Stoll GmbH & Co., Reutlingen, Fed. Rep. of Germany

Filed Feb. 25, 1983, Ser. No. 469,973
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1982, 3207355
Int. Cl.³ D04B *15/88*
U.S. Cl. 66—149 R **8 Claims**



1. A knitted fabric spreader device for flat knitting machines having disposed beneath the comb gap defined between the two needle beds spiked rotatable rollers for taking down the knitted fabric by the take-down device of the machine, characterised by the fact that the spiked rollers (14) are arranged over a full length of the needle beds (10, 11) on a common carrier rod (13) which, for the purpose of clearing the comb gap (12) of the machine, is arranged for adjustment on the needle bed support frame (19) tranversely to the longitudinal direction of the needle beds (10, 11).

4,454,732

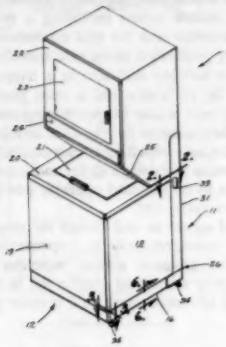
COMBINED APPLIANCE WITH UNIFYING SUPPORT STRUCTURE

Charles W. Burkland, and William J. Noe, both of Newton, Iowa, assignors to The Maytag Company, Newton, Iowa

Filed May 4, 1983, Ser. No. 491,405
Int. Cl.³ D06F *39/00*
U.S. Cl. 68—3 R **9 Claims**

1. A combined appliance having unifying support structure, the combination comprising: support means including a pair of

generally horizontally disposed base members engageable with a support surface, a generally upright column associated with each of said base members defining a pair of L-shaped support assemblies, and means for effectively joining said L-shaped support assemblies in a generally vertical predetermined spaced-apart posture; first cabinet means enclosing a first appliance and supported on said upright columns; and second cabinet means enclosing a second appliance and engageable with



said support surface, said second cabinet means defining lower recesses for receiving the base members of said support means when said second appliance is positioned relative to said support means, the exposed sides of said first and second appliance means and the sides of said support means being generally vertically aligned whereby the support structure and cabinetry for said first and second appliances have the characteristics of a unitary appliance.

4,454,733

BEAM FOR USE IN TREATMENT OF TEXTILE STRIPS WITH TREATMENT LIQUID

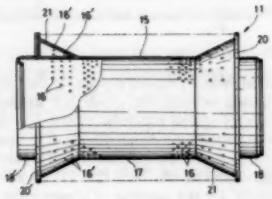
Akio Fukurol, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Sep. 16, 1981, Ser. No. 302,731

Claims priority, application Japan, Sep. 27, 1980, 55-133694

Int. Cl.³ D06B *23/04*; B65H *75/18*

U.S. Cl. 68—198 **2 Claims**



1. A beam for use in the treatment with a liquid of an elongate textile strip wound around the beam, which beam comprises a hollow cylindrical tube including a central barrel portion having a multiplicity of perforations for the passage therethrough of the treatment liquid from the inside of said tube;

a pair of flanges disposed at opposite ends of said tube;

and a pair of frustroconical portions, each disposed between said perforated central barrel portion and one of said flanges, each frustroconical portion having a surface diverging toward said flange, said frustroconical portions each having a multiplicity of perforations spaced with a pore-to-pore spacing that increases proportionately with an increase in the diameter of the frustroconical portion, turns of the strip wound around said conical portion being held in contact with said surface at one of opposite longitudinal edge portions of the strip, said surface inclining at such an angle that the treatment liquid which has been passed through such perforations of said central barrel portion is uniformly distributed over the entire length of said tube, the angle of inclination of said surface being between 20° to 30° with respect to the axis of said tube.

4,454,734

RIGID AND COMPRESSIBLE DYE TUBES

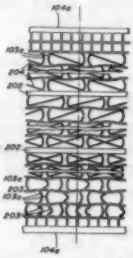
Robert P. Marquis, Bromont, and Peter Weileder, West-Brome, both of Canada, assignors to Plastech, Inc., Cowansville, Canada

Continuation-in-part of Ser. No. 190,601, Sep. 25, 1980, Pat. No. 4,331,305. This application May 4, 1982, Ser. No. 374,757

Claims priority, application Canada, Sep. 24, 1981, 386600

Int. Cl.³ B65H *75/22*; D06B *23/04*

U.S. Cl. 68—198 **27 Claims**



1. A sleeve having terminal ends, said sleeve being for use in the treatment of textile threads and yarns including dyeing having a shell, and said shell comprising peripherally extending axially spaced-apart rings which are elastically yielding in the axial direction of the shell and peripherally spaced-apart webs which are elastically yielding in the axial direction of the shell, said webs extending axially between and connecting together axially adjacent ones of said rings, the axially consecutive webs being laterally offset relative to each other whereby when said rings and webs are yielding, said rings become serpentine and said webs become bowed, at least selected ones of said webs being adapted to bow in a selected common direction generally circumferential with respect to said sleeve to ensure substantially uniform displacement of the sleeve members, thus to provide a sleeve having minimum restriction for passage of dye and which sleeve is substantially rigid in both yielded or non-yielded states, and at least one of said peripherally extending axially spaced-apart rings, which is elastically yielding in the axial direction of the shell and spaced generally uniformly respective the terminal ends of the sleeve, having a cross-section of greater thickness than that of the remaining yielding rings, whereby said thicker ring yields to a lesser extent than the remaining rings during compression of the sleeve.

4,454,735

SCREW LOCK

Tsao K. Huang, 73-2, Yung Lo Alley, Shui LI Hsiang, I Feng Tsun, Nanto, Taiwan 553

Continuation-in-part of Ser. No. 146,373, May 2, 1980, abandoned. This application Jun. 11, 1981, Ser. No. 272,790

Int. Cl.³ E05B *15/06, 19/02, 19/06*

U.S. Cl. 70—346 **5 Claims**

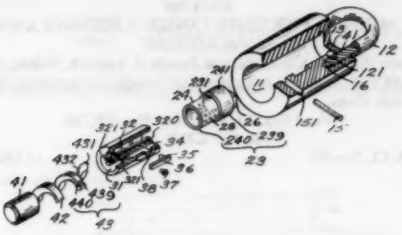
1. A lock comprising:

a body including a main bore;

a cylinder disposed for selective rotational movement in said bore, said cylinder including a central cylinder bore having respective cylinder switch points disposed therein, said cylinder switch points comprising axially disposed protrusions in the interior of said central cylinder bore;

a bushing secured in said main bore rearwardly adjacent to said cylinder, said bushing, including a keyway aperture defining predetermined spiral parameters; and

a spiral shaped key member having at least one spiral turn,



configured in accordance with said predetermined parameters, removably received in said cylinder bore by screwing advancement through said bushing, said key member including a respective key switch point means for operating with said cylinder switch points to selectively effect rotation of said cylinder, said key switch point means comprising respective depressions in said spiral shaped key member disposed on the circumference of the spiral turns of said spiral shaped key member to receive said protrusions.

4,454,736

CYLINDER LOCK

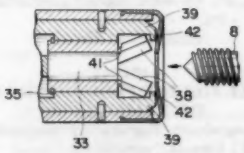
Haruo Mochida, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Sep. 25, 1981, Ser. No. 305,780

Claims priority, application Japan, Sep. 26, 1980, 55-134806

Int. Cl.³ E05B *15/16, 63/00*

U.S. Cl. 70—422 **4 Claims**



1. A cylinder lock, comprising:

an outer member having a bore,

an inner cylinder means including an inner cylinder rotatably received in said bore, said inner cylinder having a keyhole and being rotatable within said outer member only when a correct key is inserted into said keyhole, and

actuating means actuated by rotational movement of said inner cylinder to cause locking action of the cylinder lock,

said inner cylinder including, at an entrance of said keyhole, a deformable portion having an insertion hole through which a key is insertable into said keyhole, said outer member including a stop portion having an inwardly projecting flange defining a limited opening, said deformable portion being deformable into radially expanded form when engaged by an object other than a correct key forcibly inserted into said keyhole through said insertion hole, said deformable portion in a deformed condition having an outer circumferential contour radially larger than said limited opening of said stop portion and located behind said inward flange within said bore to contact the flange and thereby prevent unauthorized extraction of said inner cylinder axially from said outer member.

4,454,737

KEY HOLDER

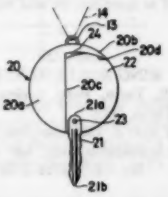
Minoru Toyoda, Nagoya, Japan, assignor to Aisin Seiki Company, Ltd., Kariya, Japan

Continuation of Ser. No. 213,563, Dec. 5, 1980, which is a division of Ser. No. 068,568, Aug. 22, 1979. This application Apr. 30, 1982, Ser. No. 373,795

Claims priority, application Japan, Sep. 8, 1978, 53-110845; Feb. 6, 1979, 54-13025; Feb. 6, 1979, 54-13026; Feb. 6, 1979, 54-13027; Feb. 6, 1979, 54-13028; Feb. 6, 1979, 54-13029

Int. Cl.³ A47G *29/10*

U.S. Cl. 70—456 R **4 Claims**



1. A pendant type key holder comprising:

a body;

a key pivotably mounted on said body and movable between an operating position in which the key is disposed outside said body and a non-operating position in which the key is housed within said body; and

biasing means connected to said body and pressing the tip portion of said key for maintaining said key at the non-operating position thereof, said biasing means constructed to provide maximum biasing force when said key is in said non-operating position with gradually decreasing biasing force as said key is moved from said non-operating position, said body including a concave portion formed therein within which said key is disposed in said non-operating position, said body having a first and second surface portion, said first surface portion having said concave portion formed therein and including a substantially straight edge portion and an arcuate edge portion intersecting said substantially straight edge portion, said biasing means being mounted in said concave portion at the intersection of said substantially straight edge portion and said arcuate edge portion.

4,454,738

ROLLER LEVELER AND METHOD OF OPERATING SAME

John R. Buta, Salem, Ohio, assignor to The Paxson Machine Company, Salem, Ohio

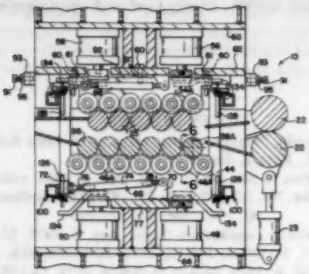
Filed Jun. 29, 1981, Ser. No. 278,981

Int. Cl.³ B21D *1/02*

U.S. Cl. 72—21 **55 Claims**

1. In a roller leveler including a frame and a plurality of rollers journaled in said frame having preset gaps between pairs of opposed rollers, said opposed rollers and said frame being subject to distortion due to the forces of separation developed by a work product passing between said pairs of rollers, and means to correct the distortion of at least one of

said rollers, the improvement comprising: roller distortion sensing and measuring means; and means to actuate said roller



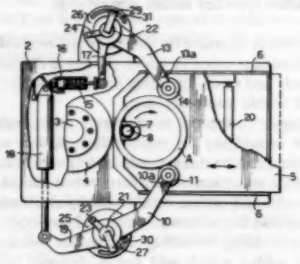
distortion correction means responsive to the sensed and measured distortion of at least one of said rollers.

4,454,739

RING ROLLING MILL

Raffaele Ciccorelli, Turin, Italy, assignor to HS Hydraulic Systems S.r.l., Turin, Italy

Filed Apr. 5, 1982, Ser. No. 365,691
Claims priority, application Italy, Apr. 13, 1981, 67506 A/81
Int. Cl.³ B21H *1/06*
U.S. Cl. 72—23 **9 Claims**



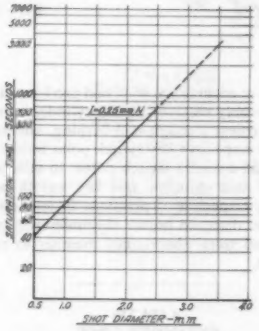
1. A ring rolling mill comprising:
a driven working roll with a fixed vertical axis,
a table moveable towards and away from the roll,
a rotatable mandrel with a vertical axis carried by the table and serving as a counter-roll, and about which the ring is arranged in such a way that it rests on the table and is rolled between the roll and the mandrel, the axes of the roll and the mandrel lying in a vertical plane parallel to the direction of movement of the table,
a containment roller with a vertical axis, operable to laterally engage the ring being rolled,
a containment arm pivoted about a vertical axis carrying said containment roller at a free end thereof, and
actuating means for making the containment arm turn in the sense such as to displace the containment roller from the said vertical plane gradually as the diameter of the ring increases by the effect of rolling,
a tracer arm (13) pivoted about a vertical axis and which is a mirror image of the said containment arm (10) across the vertical plane and is resiliently biased towards this plane,
a tracer roller (14) with a vertical axis, carried by the said tracer arm (13) and having the same diameter as the containment roller (11),
a pair of angle sensor means (21,22) each sensitive to the angular position, respectively of the containment arm (10) and tracer arm (13) for producing signals indicative of each angular position and
a control circuit (32) supplied with the signals produced by the angle sensor means (21,22) and operable to control the said actuating means (34,18) for making the containment arm (10) turn in such a way as to maintain the containment roller (11) in a symmetrical position with respect to the tracer roller (14) across the said vertical plane.

4,454,740

METHOD FOR SIMULTANEOUS PEENING AND SMOOTHING

James W. Neal, Columbia, and Joseph F. Loersch, Bolton, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 10, 1981, Ser. No. 300,725
Int. Cl.³ C21D *7/06*
U.S. Cl. 72—53 **11 Claims**



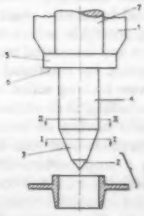
1. The method of surface treating a workpiece, to provide residual compressive stresses corresponding to a peening intensity of at least 0.1 mm N and a surface finish smoother than 40 microinch AA, characterized by impacting the workpiece surface with spherical shot particles, the shot particles being infrangible, having a hardness greater than the workpiece, a surface finish better than 30 microinch AA, and diameters lying in the range 1–2.5 mm which are substantially uniform to within at least ±5%.

4,454,741

FLOW DRILL FOR THE PROVISION OF HOLES IN SHEET MATERIAL

Aloysius J. Hoogenboom, Baarsdorp, Netherlands, assignor to Flowdrill B.V., Utrecht, Netherlands

Filed Feb. 19, 1982, Ser. No. 350,396
Int. Cl.³ B21D *28/36*
U.S. Cl. 72—71 **2 Claims**



1. A flow drill for the production, substantially by heat and pressure of a hole surrounded by a collar in metal sheet or

metal tube walls, comprising a shaft having a smooth tapering operative end being based on a regular polygon and having a cross section defined by a continuous convex contour, situated within the circle circumscribing the polygon, and consisting of a complex harmonic curve obtained by the formula:

$$R(\phi) = R_o - \tfrac{1}{2}e + \tfrac{1}{2}e\cos\left\{ \arccos(\delta\sin^2 n\phi + \frac{|\cos n\phi|}{\cos n\phi} \sqrt{\delta^2\sin^4 n\phi - \delta^2\sin^2 n\phi + \cos^2 n\phi)} + \alpha \right\}$$

in which the condition applies to the solutions for R (ϕ) where:

$$(\sin n\phi) \cdot \sin\left\{ \arccos(\delta\sin^2 n\phi + \frac{|\cos n\phi|}{\cos n\phi} \sqrt{\delta^2\sin^4 n\phi - \delta^2\sin^2 n\phi + \cos^2 n\phi)} \right\} >> 0,$$

in which R=the radius factor from the drill center, R_O=-radius vector in a starting point of the contour in one of the apexes of the polygon, ϕ=the angle between R and R_O, e=$R_{max} - R_{min}$, n is the number of apexes of the polygen, δ is a modulation factor and α is a non-symmetry factor.

4,454,742

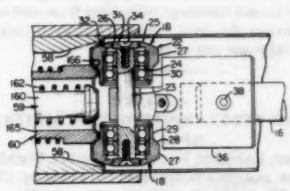
BOTTOM ROLL-FORMING METHOD AND APPARATUS AND RESULTANT CAN END CONFIGURATION

Laszlo A. Gombas, Rte. 7, Box 555Q, Evergreen, Colo. 80439

Division of Ser. No. 138,856, Apr. 8, 1980, Pat. No. 4,341,321, which is a continuation-in-part of Ser. No. 931,124, Aug. 4, 1978, Pat. No. 4,294,097. This application Jul. 26, 1982, Ser. No. 401,915

Int. Cl.³ B21D *51/26*

U.S. Cl. 72—115 **3 Claims**



1. The method of forming a container body of the type having a cylindrical side wall closed at one end by an integral end wall, comprising:

first, applying mono-axial forming stress to a sheet of malleable material to form an optimized blank; and

second, increasing the volume of the optimized blank by applying reforming forces to the end wall of said optimized blank to form a generally dome shaped outward extension that protrudes beyond the bottom line of the optomized blank.

4,454,743

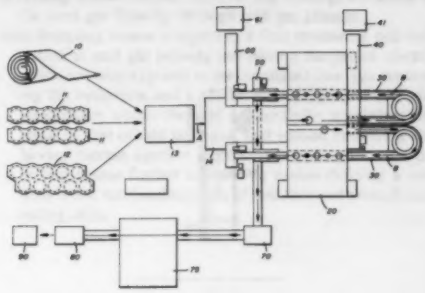
INTEGRATED CONTAINER MANUFACTURING SYSTEM AND METHOD

Joseph D. Bulso, Jr., Canton, and Stephen D. Doyle, North Canton, both of Ohio, assignors to Redicon Corporation, Canton, Ohio

Filed Feb. 2, 1982, Ser. No. 345,194

Int. Cl.³ B21D *22/00*

U.S. Cl. 72—349 **8 Claims**



1. A method of forming container bodies from flat stock material in a reciprocating press, comprising the steps of:

(A) passing the stock into the press and blanking and cupping at least two cups in a central work area on each press cycle;

(B) forcing the cups through the die and transferring the cups out of the press along two divergent paths;

(C) directing the cups from said divergent paths to two parallel paths and returning the cups to the press to work areas on each side of the central work area;

(D) finish forming the cups into container bodies within the press; and

(E) again transferring the containers out of the press.

4,454,744

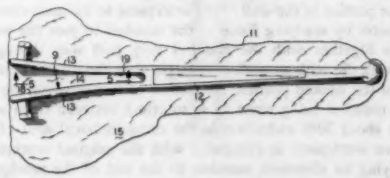
METHOD OF FORGING A BIFURCATED MEMBER

Votaw S. Durbin, III, St. Louis, Mo., assignor to Durbin-Durco, Inc., St. Louis, Mo.

Filed Jul. 10, 1981, Ser. No. 281,960

Int. Cl.³ B21J *3/02*; B21K *13/00*

U.S. Cl. 72—362 **2 Claims**



1. A method of forging a member having closely spaced, substantially parallel bifurcated portions, comprising the steps of:

(a) forging the member to form a handle with a pair of relatively thick bifurcated portions at one end having a relatively thin transverse web therebetween, the bifurcated portions and the web diverging laterally outward to a relatively wide entrance from a relatively narrow throat,

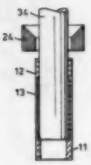
(b) forging the member to punch out the transverse interconnecting web from between the bifurcated portions, and

(c) coining the bifurcated portions inwardly toward each other into substantially parallel relation having a slot of substantially constant width therebetween.

4,454,745
PROCESS FOR COLD-FORMING A TUBE HAVING A THICK-WALLED END PORTION

Ivano G. Cudini, Woodstock, Canada, assignor to Standard Tube Canada Limited, Woodstock, Canada

Filed Jul. 16, 1980, Ser. No. 169,831
Int. Cl.³ B21K *21/08*
U.S. Cl. 72—370 9 Claims

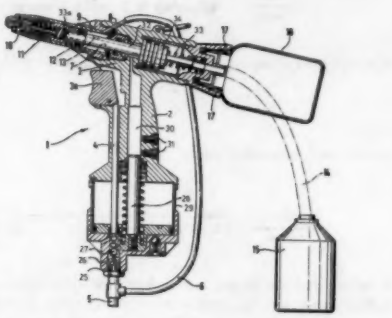


1. Process for forming a tube having a relatively thick-walled end portion, comprising the steps of: providing a tube workpiece having an opening at each end and whose wall is of substantially uniform thickness; forcing an undeformed end face of the workpiece into a die having a tapering entrance throat leading to a restricted die orifice of diameter intermediate the external and internal diameters of the workpiece, to provide the workpiece with a necked end portion of external diameter greater than the internal diameter of the workpiece and connected to a main portion of the workpiece by a tapering portion; positioning within the workpiece a first mandrel having a head portion for engaging within the interior of the necked portion and a shoulder engaging the interior of said tapering portion, and having a main portion which extends within the main portion of the workpiece, said main portion of the mandrel being of diameter intermediate the external and internal diameters of said necked portion; thinning and drawing down onto the mandrel the wall of at least a major portion of the length the workpiece extending rearwardly from the necked portion to bring the necked portion and said at least major portion of the wall of the workpiece to the same external diameter by applying force to the mandrel to pass the workpiece together with the mandrel only part way through a drawing die with an orifice no larger than the external diameter of the necked portion; the orifice of said drawing die and said mandrel being sized so as to effect between them an at least about 30% reduction in the cross-sectional area of the drawn workpiece as compared with the original workpiece; applying an abutment member to the end of the workpiece remote from said necked end; retracting the mandrel from the workpiece while holding the workpiece against the abutment member to thereby withdraw the mandrel from the workpiece without altering the dimensions of the workpiece, inserting into the part-drawn workpiece a second mandrel of diameter smaller than the main portion of the first mandrel, the second mandrel having a shoulder portion engaging the interior of the tapering portion of the workpiece, drawing the workpiece together with the second mandrel through a drawing die by applying force to the second mandrel; and withdrawing the second mandrel from the workpiece without altering the dimensions of the workpiece by engaging its end opposite from the necked portion with an abutment member and retracting the second mandrel.

4,454,746
BLIND RIVETING DEVICE WITH RIVET PIN CONVEYING MEANS

Manfred F. Schwab, Wiesbaden, Fed. Rep. of Germany, assignor to Alfred Honsel Nieten- und Metallwarenfabrik GmbH & Co., Fed. Rep. of Germany

Filed Nov. 5, 1981, Ser. No. 318,490
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1981, 3125838
Int. Cl.³ B21D *31/00*
U.S. Cl. 72—391 9 Claims



1. A blind riveting device comprising
a head having a mouthpiece for engaging rivets at its front end,
a handle extending from said head,
actuating means comprising a piston and cylinder arrangement within said head operable by compressed air to pull rivet pins from rivets,
first means for supplying compressed air to said actuating means,
said head having a discharge tube extending from said mouthpiece through said head for guiding said rivet pins out of said head,
stationary means defining an isolated annular chamber in said head intermediate said mouthpiece and said actuating means and surrounding said discharge tube,
second means fixedly connected to said stationary means for supplying compressed air to said annular chamber,
and a plurality of bores about said discharge tube inclined rearwardly and inwardly providing communication from the annular chamber into said discharge tube such that compressed air moves rearwardly through said plurality of bores to said discharge tube away from said mouthpiece and conveys the rivet pins rearwardly through the discharge tube and out of the head.

4,454,747
HIGH-LOW LEVEL CONTROL TEST METHOD AND APPARATUS

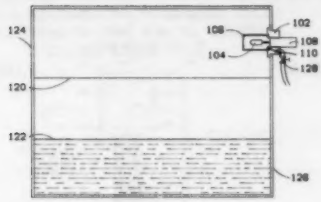
John H. Ecuer, Lafayette, La., and Michael D. Watkins, Garden City, Egypt, assignors to Standard Oil Company, Chicago, Ill.

Filed Nov. 14, 1980, Ser. No. 206,751
Int. Cl.³ G01F *25/00*
U.S. Cl. 73—1 H 4 Claims

1. A float level control testing apparatus mounted to a liquid containment vessel, comprising:
a flanged connector extending through an opening in the wall of the liquid containment vessel and attached thereto, the flanged connector having a horizontal bore extending therethrough for removable support of a float level control device which has a float hingeably connected thereto and extending into the interior of the liquid containment vessel,
a fluid cage connected to the flanged connector and dis-

posed within the interior of the liquid containment vessel, the fluid cage having an opening therethrough for entry and removal of liquid within the liquid containment vessel, and

a fluid passageway extends through the flanged connector from the exterior of the liquid containment vessel to the interior of the cage adjacent a lower portion thereof, the



exterior opening of the fluid passageway being provided with connection means for removal interconnection to a source of test fluid,

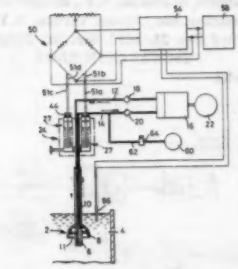
whereby the test fluid is introduced into the interior of the cage through the fluid passageway to displace the float which provides an indication of the operability of the float level control device.

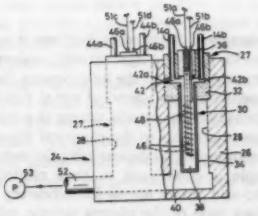
4,454,748

APPARATUS FOR MEASURING THE CONTENT OF HYDROGEN DISSOLVED IN A MOLTEN METAL

Shiro Terai; Shiro Sato; Sakae Kato; Masaya Imai; Susumu Inumaru, and Masahiro Yoshida, all of Nagoya, Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo, Japan

Filed Sep. 28, 1982, Ser. No. 426,138
Int. Cl.[3] G01N *27/18*
U.S. Cl. 73—19 11 Claims





1. An apparatus for measuring the content of hydrogen dissolved in a molten metal, which comprises:

an immersion head immersed within a batch of the molten metal and having means for bringing an inert gas into contact with the molten metal;

circulatory means, connected to said immersion head and having a gas passage cooperating with said immersion head to constitute a closed path, for circulating the inert gas a plurality of times through said gas passage to and from said immersion head; and

detecting means for determining the hydrogen-content of the inert gas flowing through said gas passage,

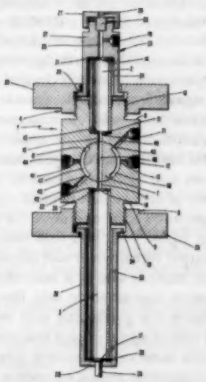
said detecting means comprising a first measuring cell connected to said gas passage and having therein an electric resistance wire exposed to the circulated inert gas containing the hydrogen, and a second measuring cell filled with atmosphere whose thermal conductivity is substantially equal to that of said inert gas, said second measuring cell having therein another electric resistance wire, said detecting means further comprising means defining a vacuum space surrounding each of said first and second measuring cells.

4,454,749

DEVICE FOR COLUMN CHROMATOGRAPHY APPARATUS

Claude Guillemin, Paris; Jean Lissot, Brie Comte Robert, and Jean-Pierre Vasseur, Longjumeau, all of France, assignors to Prolabo, Paris, France

Filed Sep. 24, 1981, Ser. No. 305,331
Claims priority, application France, Sep. 26, 1980, 80 20987
Int. Cl.[3] G01N *31/08*
U.S. Cl. 73—23.1 20 Claims



1. In a fluid chromatography apparatus, a device for operably connecting a precolumn and a column, said device comprising

a body member including support surfaces for a column inlet and a precolumn outlet and including a central aperture, first conduit means respectively extending from said aperture to said precolumn outlet and column inlet, and second conduit means extending from said aperture to a plurality of external fluid inlet and/or outlet means, and

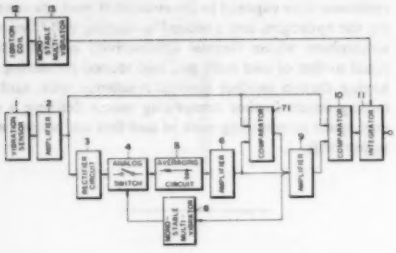
a stopper for said central aperture, said stopper comprising a passage for directly interconnecting said precolumn outlet with said column inlet by means of a substantially linear flow path, and passages for independently connecting each of said precolumn outlet and column inlet to individual ones of said external fluid inlet and/or outlet conduits.

4,454,750

APPARATUS FOR GENERATING A KNOCK SIGNAL FOR USE WITH AN INTERNAL COMBUSTION ENGINE

Kenichi Yoshida; Masaharu Asano, and Kenji Yoneda, all of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 13, 1982, Ser. No. 367,922
Claims priority, application Japan, Apr. 14, 1981, 56-55082
Int. Cl.³ G01L 23/22
U.S. Cl. 73—35 4 Claims



1. An apparatus for generating a knock signal for use with an internal combustion engine having knock induced vibrations, comprising:

a vibration sensor mounted on the engine and responsive to both said knock-induced vibrations and other vibrations to generate an output signal;

reference signal generating means responsive to said output signal of the vibration sensor and operative to generate a first and a second reference signal, each having a level proprotional to the average amplitude of a component of said output signal of the vibration sensor representing engine vibration other than said knock-induced vibration, said reference signal generating means including switch means responsive to a switch control signal and operative to inhibit signals from said vibration sensor and to hold the level of signal from said vibration sensor directly before the application of said switch control signal in the presence of said switch control signal, and operative to permit signals from said vibration sensor to pass therethrough in the absence of said switch control signal;

a first comparator means operative for comparing said sensor output signal with said first reference signal to produce an output signal when said output signal of the vibration sensor exceeds said first reference signal;

feedback means connected to said first comparator means and operative for producing said switch control signal from said output signal of said first comparator means and for applying same to said switch means; and

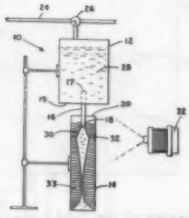
a second comparator means operative for comparing said output signal of said vibration sensor with said second reference signal to produce said knock signal, wherein said first reference signal is so set as to be sufficiently lower than the component of said output signal of said vibration sensor representing the knock-induced vibration so that the output signal of said first comparator means includes a component due to slight knocking, thereby eliminating the tendency of the peaks of said output signal of said vibration sensor due to knocking to falsely raise the level of said first reference signal, and wherein the level of said second reference signal is so set as to be higher than said first reference signal level and adjusted at a suitable level so that the magnitude of said knock signal does not include said component due to slight knocking, thereby accurately representing the intensity of said knock-induced vibration.

4,454,751

EXTRUDATE SWELL RHEOMETER AND METHOD OF USING SAME

Joseph E. Matta, Bel Air, and Jeffrey L. Harris, Edgewood, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 30, 1982, Ser. No. 431,870
Int. Cl.³ G01N 11/04, 11/02; G01D 9/42
U.S. Cl. 73—56 12 Claims



1. A rheometer for measuring the extrudate swell of polymeric solutions, comprising:

a first fluid reservoir for said test polymeric solution;

a second fluid reservoir disposed beneath said first reservoir;

conduit means for fluid communication between said first and second fluid reservoirs;

means for initiating flow of said polymeric solution from said first fluid reservoir to said second fluid reservoir; and

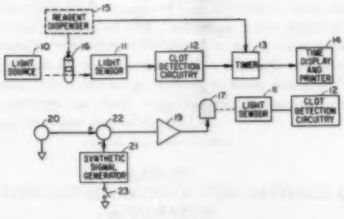
means for imaging said extrudate swell of said polymeric solution exiting said conduit means into said second fluid reservoir.

4,454,752

TEST CIRCUIT FOR USE IN COAGULATION INSTRUMENT

Richard E. Scordato, Scarsdale, N.Y., assignor to Medical Laboratory Automation, Inc., Mount Vernon, N.Y.

Filed Jun. 21, 1982, Ser. No. 390,679
Int. Cl.³ G01N 33/48
U.S. Cl. 73—64.1 13 Claims



1. A photometric coagulation instrument comprising light source means for directing light through a plasma sample, light sensor means responsive to the light passing through a plasma sample for generating an electrical signal that is a function of the optical density of the plasma sample as a clot forms therein, circuit means responsive to the electrical signal generated by said light sensor means for determining the instant at which the plasma sample is considered to have clotted, timer means responsive to said circuit means for indicating a time measure of the clotting time of the plasma sample, additional circuit means for producing a clot simulating signal that will cause said circuit means to respond as though a plasma sample were placed in the light path between said light source means and said light sensor means, and means for activating said additional circuit means when it is desired to obtain a time measure

of clotting time without using a plasma sample and thereby check the operation of said circuit means.

4,454,753
DIFFUSER/EJECTOR SYSTEM FOR A VERY HIGH VACUUM ENVIRONMENT

Kenneth E. Riggs, Huntsville, and Carl J. Wojciechowski, Harvest, both of Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

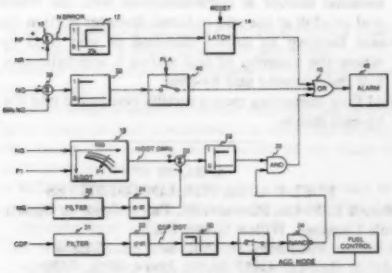
Filed Aug. 19, 1982, Ser. No. 409,678
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—117.1 **16 Claims**

1. A diffuser system for testing space engines comprising:
a space simulation chamber having an area for the mounting of a space engine to be tested;
a diffuser operatively connected to said space simulation chamber downstream from said mounting area;
an ejector operatively connected to said diffuser; and
a jet engine directly connected to said ejector for creating a high vacuum environment in said diffuser.

4,454,754
ENGINE FAILURE DETECTOR

Raymond D. Zagranski, Somers, and Albert H. White, Wethersfield, both of Conn., assignors to Chandler Evans, Inc., West Hartford, Conn.

Filed May 26, 1982, Ser. No. 382,113
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—117.3 **11 Claims**

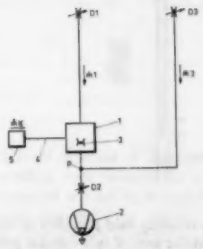


1. A gas turbine engine failure detector, the engine being instrumented to provide signals commensurate with engine output shaft and load speed and engine gas generator speed, said detector comprising:
means for comparing the signals commensurate with output shaft and load speed and producing a speed error signal indicative of any difference therebetween;
means responsive to a speed error signal corresponding to an output shaft speed which exceeds the load speed by a preselected amount for generating a first engine failure signal;
first means responsive to a gas generator speed signal for producing a signal commensurate with the actual rate of change of the gas generator speed;
second means responsive to a gas generator speed signal for producing a variable signal commensurate with the gas generator speed rate of change limit for the operating conditions;
means for comparing said signals commensurate with the actual gas generator rate of change of speed and rate of change of speed limit for generating a second engine failure signal when the actual rate of change of speed exceeds the limit; and
means responsive to said first and second failure signals for providing an engine failure warning.

4,454,755
METHOD FOR TESTING A CARBURETOR

Ernst Leünig, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Aug. 25, 1982, Ser. No. 411,340
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1981, 3137562
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—118 **1 Claim**



1. A method for testing a carburetor for an internal combustion engine, said carburetor having an air intake passage, an adjustable throttle valve, and a pressure responsive fuel metering device, comprising the steps of:
connecting a supply of fuel to said fuel metering device;
arranging a first critical flowthrough nozzle means and a second critical flowthrough nozzle means upstream and downstream, respectively, of said carburetor, wherein said first critical flowthrough nozzle means has an adjustable flow cross-section for regulating air throughput through said carburetor;
arranging a third critical flowthrough nozzle means, in parallel with said carburetor and said first nozzle means for supplying air downstream of said carburetor, wherein said third nozzle means has an adjustable flow cross-section for regulating air pressure downstream of said carburetor;
setting a plurality of combinations of air throughput through said carburetor, downstream air pressure, and throttle valve position, for establishing a plurality of flow conditions in said carburetor; and
measuring the fuel throughput to said metering device at a plurality of said combinations of settings.

4,454,756
INERTIAL BOREHOLE SURVEY SYSTEM

Harper E. Sharp, Houston, Tex.; Leo Spiegel, Sharon, Mass.; Richard M. Masters, Elmer J. Frey, both of Lexington, Mass.; John R. Howatt, Bedford, Mass., and Gary E. Walker, Dover, Mass., assignors to Wilson Industries, Inc., Houston Tex.

Filed Nov. 18, 1982, Ser. No. 442,849
Int. Cl.³ E21B *47/00*
U.S. Cl. 73—151 **51 Claims**

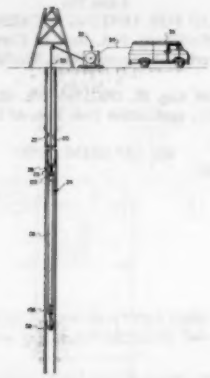
13. A well survey system for determining the location of relatively deep boreholes with great accuracy comprising:
a tubular probe adapted to be passed through a wellbore;
computer means adapted to be electrically coupled to said

tubular probe for receiving data therefrom and for transmitting control signals thereto;

at least one electrical conductor forming an electrical data transmission path between said computer means and said tubular probe;

a plurality of inertial measurement sensors rotatably mounted in fixed relationship within said tubular probe for sensing acceleration and/or rotation of said tubular probe;

means for selectively coupling each of the outputs of said plurality of inertial measurement sensors to said at least one electrical conductor;



means of selectively rotating said plurality of inertial measurement sensors about the axis of said tubular probe in response to a control signal;

first means for generating said control signal in response to the output of a selected one of said plurality of inertial measurement sensors; and

second means for generating said control signal in response to an electrical signal coupled to said at least one electrical conductor from said computer means.

4,454,757

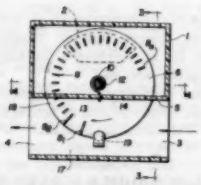
WIND SPEED AND DIRECTION MEASURING INSTRUMENT

Albert Weinstein, Alexandria, Va.; Michael A. Skeen, Alameda, and John L. Connell, San Francisco, both of Calif., assignors to Davis Instruments Corporation, San Leandro, Calif.

Filed Sep. 7, 1982, Ser. No. 415,740

Int. Cl.³ G01F *1/28*

U.S. Cl. 73—189 **1 Claim**



1. A small portable instrument capable of being carried in a shirt pocket for measuring wind speed and indicating wind direction comprising a casing, an inlet port and outlet port with a channel connecting said ports, an aluminum disc with a multiple number of vanes orthogonal to the plane of said aluminum disc, said vanes being graduated in both area and radial distance from the center of said aluminum disc, a shaft fixed to the center of said aluminum disc and orthogonal to its plane, said shaft rotatably residing in bearings of said casing, a spiral spring centered on said shaft, its inner end fixed to said shaft and its outer end fixed to said casing, markings on the face of said aluminum disc relating its angular rotation with the speed of the wind, a transparent window located on the face of said casing in a manner to permit direct viewing of said markings, permanent magnets positioned close to and above and below the outer edge of said aluminum disc to damp its oscillations, a foldable handle with a fulcrum at one corner of said casing, which when closed against the edge of said casing protects said inlet port.

4,454,758

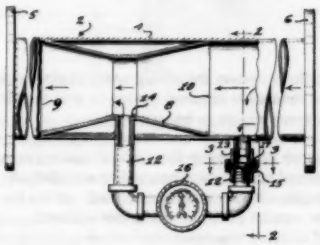
VENTURI-TYPE SHUNT FLOWMETER

Marion H. Miller, P.O. Box 790, Colorado Springs, Colo. 80901

Filed Feb. 28, 1983, Ser. No. 470,248

Int. Cl.³ G01F *1/44, 5/00*

U.S. Cl. 73—202 **2 Claims**



1. A shunt fluid flow measuring device comprising:

a section of conduit having a substantially fixed diameter and comprising the primary fluid channel, said section having a reduced diameter tubular portion therein forming a venturi tube;

means forming a fluid by-pass, having a diameter around a portion of said section of conduit and having an inlet end and an outlet terminal end, said by-pass having the outlet terminal thereof in communication with the interior of said conduit at the said reduced diameter portion thereof;

means forming an orifice disposed in said fluid by-pass where the diameter of said orifice is approximately one-half the diameter said by-pass,

fluid flow measuring means serially connected into the fluid by-pass means.

4,454,759

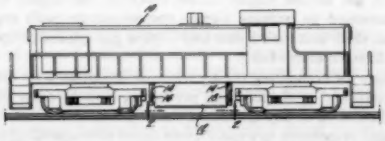
FUEL GAUGE FOR LOCOMOTIVES

Frederick L. Pirkle, Phoenixville, Pa., assignor to Ogontz Controls Company, Willow Grove, Pa.

Filed May 10, 1982, Ser. No. 376,303

Int. Cl.³ G01F *23/02, 23/14;* G01L *7/20*

U.S. Cl. 73—299 **22 Claims**



1. A gauge for indicating the level of a liquid in a tank comprising a block disposed exteriorly of said tank adjacent the bottom thereof, a first chamber in said block, a liquid passage means connecting the bottom of said tank with an upper region of said first chamber, a second chamber in said block, passage means at the bottom of said first and second chambers connecting the bottoms of said first and second chambers, a gauge glass

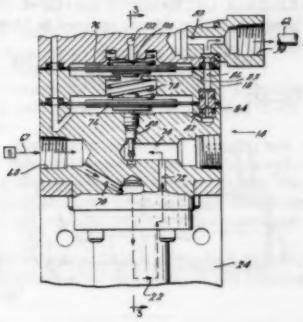
extending above said block, means connecting said gauge glass with said second chamber, and an indicator liquid in said first and second chambers, said indicator liquid having a specific gravity heavier than that of the liquid of said tank and being immiscible with respect thereto, the initial introduction of liquid into said tank resulting in the entrance of said liquid into said first chamber and producing an interface with the heavier immiscible indicator liquid, the volume of indicator liquid in said chambers being sufficient to assure the maintaining of the interface level above said passage means for any liquid level of said tank, said indicator liquid passing from said second chamber into said gauge glass upon the introduction of a predetermined quantity of liquid into said tank to provide a visual indication of the quantity of liquid in said tank.

4,454,760

PRESSURE SENSING SYSTEM

George W. Carlisle, Ann Arbor, Mich., assignor to King Engineering Corporation, Ann Arbor, Mich.

Filed Jul. 29, 1981, Ser. No. 287,351
Int. Cl.[3] F16K *37/00*; G01F *23/16*
U.S. Cl. 73—302 23 Claims



1. In an apparatus for measuring the pressure of a fluid in a tank including sensor control means, comprising:

a source of an indicator gas connected to the sensor control means under pressure;

said sensor control means including indicator gas flow regulator means in fluid communication with said source;

sensor means for sensing the pressure of the fluid being measured, including

a deflectable diaphragm exposed on its outer side to the pressure of the fluid being measured and having an opposite inner indicator side,

first passage means in fluid communication with said flow regulator means and said sensor means for supplying said indicator gas from said flow regulator means to said indicator side of said diaphragm,

said indicator gas being supplied by said flow regulator means at a controlled flow rate and at a sufficiently high pressure to balance the pressure of the fluid being measured on said outer side of said diaphragm, and

second passage means, in fluid communication with said sensor means and said flow regulator means, for venting said indicator gas from said indicator side of said diaphragm in response to the position of said diaphragm;

the improvement comprising:

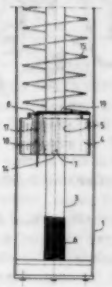
pressure-reducing means operable in said sensor control means in response to a differential indicator gas pressure in the sensor control means of said apparatus for creating a vacuum zone in said apparatus; and third passage means in said apparatus for providing fluid communication between said vacuum zone and the indicator gas in said apparatus to reduce the overall pressure thereof.

4,454,761

LIQUID LEVEL DETECTOR ADAPTED IN PARTICULAR TO DETERMINE THE LEVEL OF FUEL IN A VEHICLE FUEL TANK

Jean Coulange, Conflans Sainte-Honorine, France, assignor to e.d. Veglia, France

Filed Jun. 15, 1981, Ser. No. 273,749
Claims priority, application France, Jun. 19, 1980, 80 13586
Int. Cl.[3] G01F *23/06*
U.S. Cl. 73—308 3 Claims



1. In a liquid level detector of the type comprising a fixed rod bearing a winding over virtually the whole of its height, an annular float mounted around the rod and bearing at least one conducting blade constantly in contact with said winding, warning means comprising a conducting rod sliding in a bore made in the float, said bore having its axis substantially parallel to the axis of the fixed rod, the conducting rod comprising a retaining means, and a conducting surface fixed to the lower end of the fixed rod, the arrangement being such that the conducting rod has a normal position where said conducting rod projects downwardly from the float when the level is higher than a determined warning level and comes into contct with the conducting surface when this level is reached, and electrical connections connecting the winding, the conducting surface, the conducting blade and the conducting rod to output terminals, the improvement wherein the conducting rod terminates at its top end in a supple loop made of conducting wire located in a plane substantially perpendicular to the axis of the float, the free end of said loop opposite the conducting rod being fixed on a conducting piece itself fixed on the float and connected to the conducting blade in contact with said winding, said supple loop being operable to electrically connect said conducting rod to said conducting piece and further being operable to bias said conducting rod to its normal position when said float rises after a warning.

4,454,762

MEASUREMENT SYSTEM WITH REMOTE DISPLAY

Earl S. Clark, Coventry, R.I., assignor to Federal Products Corporation, Providence, R.I.

Filed Jun. 21, 1982, Ser. No. 390,236
Int. Cl.[3] G01B *7/00*; G01R *13/02*
U.S. Cl. 73—432 A 6 Claims

1. A system for gaging a dimension of a workpiece, comprising

(a) a transducer, said transducer provided with a moveable stem adapted to engage said workpiece for gaging the dimensions thereof;

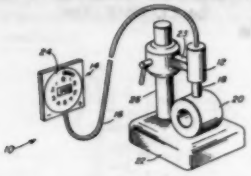
(b) an oscillator mounted to and operatively associated with said transducer and adapted to generate output signals corresponding to said gaging of the dimensions of said workpiece;

(c) attenuating means operatively associated with said trans-

ducer and coupled to said oscillator for attenuating said oscillator output signals;

(d) a display unit remote from said transducer and adapted to display a measurement made by said transducer in at least one of quasi-analog and digital forms;

(e) conduit means connecting said transducer to said display unit;



(f) amplifying means at said display unit for amplifying said attenuated signals after transmission through said conduit means;

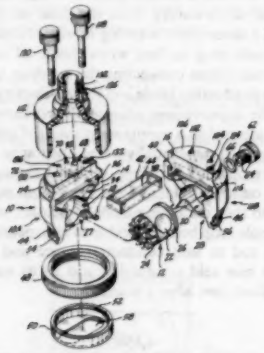
(g) signal converting means at said display unit for converting said output signals to digital signals, and, digital signal processing means connected to said converting means and to said display unit for controlling said display to present a display output representative of said measurement in at least one of a quasi-analog and digital form.

4,454,763

ROTARY ULTRASONIC SCAN HEAD INCLUDING FLUID DRIVE

George D. Mahler, Federal Way, Wash., assignor to Washington Research Foundation, Seattle, Wash.

Filed Aug. 12, 1982, Ser. No. 407,568
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—639 **40 Claims**



35. A rotor for a rotary ultrasonic scan head, said rotor comprising:

a substantially cylindrical mandrel having a longitudinal axis;

a disc formed at one end of and coaxial with said mandrel;

a bore extending axially through said mandrel and said disc;

a plurality of ultrasonic transducers disposed at angular intervals about said longitudinal axis;

a plurality of reed switches disposed at angular intervals about said longitudinal axis, each said reed switch being associated with one of said plurality of ultrasonic transducers and diametrically opposing its associated ultrasonic transducer;

a printed circuit board affixed in proximity to said disc, said printed circuit board including inner and outer conductive rings each coaxial with said longitudinal axis;

means connecting each reed switch and its associated ultrasonic transducer in electrical circuit with said inner and outer conductive rings;

a winding disposed on said mandrel at its end away from said disc, said winding being coaxial with said longitudinal axis;

means connecting said winding in electrical circuit with said inner and outer conductive rings;

an impeller carried by said mandrel at its end away from said disc, said impeller including a plurality of impeller blades disposed at substantially equal angular intervals about said longitudinal axis, said impeller having a diameter substantially equal to that of said disc;

a body formed about said mandrel intermediate said impeller and said disc, said body being formed from a resinous material that encapsulates said plurality of ultrasonic transducers and said plurality of reed switches; and,

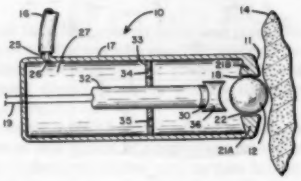
a pair of bearings disposed in said bore at opposite ends thereof.

4,454,764

ROLLER-BALL ULTRASONIC IMAGING MODULE

Paul D. Sorenson, Blaine, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Sep. 3, 1982, Ser. No. 414,703
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—642 **5 Claims**



1. An ultrasonic imaging module of the type having a transducer for converting electrical energy to a beam of ultrasonic energy and for converting received ultrasonic energy to electrical signals and a means for applying electrical energy to said transducer, the transducer being supported in a housing the imaging module characterized by:

the transducer including a transducer element mounted in the housing;

said housing including a bearing;

said housing including a chamber for holding fluid;

said transducer including a spherical ultrasonic widow rotatably mounted in said bearing and aligned with the transducer element; and

a source of fluid under pressure with a fluid conduit connecting said source to the chamber for maintaining fluid in said housing, whereby fluid is applied to a surface to which ultrasonic energy is coupled, through contact of the spherical ultrasonic window with said surface.

4,454,765

EXTENDED RANGE PRESSURE TRANSDUCERS

Arthur S. Lodge, 210 DuRose Ter., Madison, Wis. 53705

Filed Nov. 3, 1981, Ser. No. 317,604
Int. Cl.³ G01L *9/12*
U.S. Cl. 73—724 **25 Claims**

1. A pressure measuring device, comprising substantially flat diaphragm means;

a body backing up and supporting said diaphragm means;

said body having an opening behind said diaphragm means;

said diaphragm means covering said opening and affording a flexible resilient diaphragm extending across said opening;

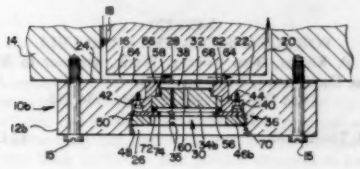
sensor means disposed in said opening behind said diaphragm for sensing any deflection of said diaphragm due to fluid pressure thereon;

a mechanical isolating ring mounted in said opening behind said diaphragm;

first connecting means between said body and said isolating ring;

and second connecting means between said isolating ring and said sensor means for supporting said sensor means in an established relationship with said diaphragm;

said first and second connecting means being of a character to hold said sensor means in an established relationship with said diaphragm while being of a character to avoid transmitting bending moments whereby said isolating ring



and said sensor means are isolated from bending moments which may be developed in said body due to the fluid pressure which is being measured;

said first connecting means comprising a shoulder on said body in said opening and facing away from said diaphragm,

a portion on said isolating ring for engaging said shoulder,

and screw threaded means between said body and said isolating ring for holding said portion of said isolating ring against said shoulder while avoiding the transmission of bending moments between said body and said isolating ring,

said screw threaded means comprising a plurality of small machine screws extending between said isolating ring and said body.

4,454,766

MEASURED VALUE RECORDING DEVICE FOR MAGNETIC-INDUCTIVE FLOW METERS

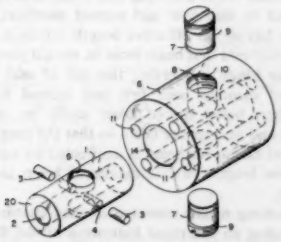
Immo Reinhold, Duisburg, Fed. Rep. of Germany, and Wouter T. Tromp, Sliedrecht, Netherlands, assignors to Rheometron AG, Switzerland

Filed Sep. 4, 1981, Ser. No. 299,600

Claims priority, application European Pat. Off., Sep. 4, 1980, EP 80200828.4

Int. Cl.³ G01F *1/58*

U.S. Cl. 73—861.12 **9 Claims**



1. In a measured value recording device for magnetic inductive flow meters of the type including a cylindrical jacket (6) of a ferromagnetic material, a tube piece (1) of an electrically insulating material axially inserted in the jacket (6), measuring electrodes (3) arranged in diametrically opposite bores (4) of the tube piece (1) and magnet coils (7) affixed with their coil core (12) diametrically opposite at the jacket (6) and connected to a power source in order to create a magnetic field penetrating substantially transverse to the longitudinal axis of the tube piece, the improvement wherein

A. the jacket (6) snugly encircles the tube piece (1);

B. a pair of diametrically opposite radial recesses (8) are formed in the jacket;

C. a pair of holes (5) are formed in the tube piece in register with the jacket recesses; and

D. the magnet coils (7) are positioned in the recesses (8) with their inner ends projecting into said holes (5) of the tube piece.

4,454,767

ULTRASONIC METERING DEVICE

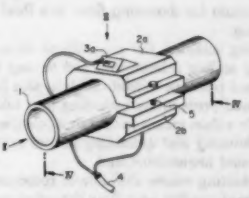
Kazuteru Shinkai; Masaru Kohno; Yukio Nakagawa, all of Kanagawa; Norimasa Tamaoki, and Kiyoshi Saito, both of Tokyo, all of Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Mar. 23, 1981, Ser. No. 246,768

Claims priority, application Japan, Mar. 25, 1980, 55-37842; Mar. 25, 1980, 55-37843; Mar. 25, 1980, 55-37907; Mar. 25, 1980, 55-37908

Int. Cl.³ G01F *1/66*

U.S. Cl. 73—861.18 **23 Claims**



1. An ultrasonic metering device in which two ultrasonic transducers are arranged adjacent a pipe in which a fluid flows in such a manner that one of said ultrasonic transducers transmits ultrasonic waves towards the fluid while the other ultrasonic transducer receives ultrasonic waves which have passed through the fluid, which comprises:

a first ultrasonic transducer having a first ultrasonic conversion element and a first wedge holding said first ultrasonic conversion element;

a second ultrasonic transducer having a second ultrasonic conversion element and a second wedge holding said second ultrasonic conversion element;

a pair of mounting members on which said first and second transducers are positioned said mounting members being adapted to be mounted on a pipe in which a fluid to be measured flows in such a manner that said mounting members clamp said pipe with first end portions of said mounting members hingedly coupled to each other; and

tightening means for coupling opposite free end portions of said mounting members which have clamped said pipe to fixedly secure said mounting members to said pipe;

wherein, in a projection taken perpendicular to the longitudinal axis of the pipe, the inner walls of said pair of mounting members have contact surfaces which are symmetrical with respect to a plane including an ultrasonic propagation path and are in point contact with the outer wall of said pipe and said ultrasonic propagation path passes through the center of said pipe; and

in a projection taken parallel to the longitudinal axis of the pipe, the inner walls of said pair of mounting member have contact surfaces which are in line contact with the outer wall of said pipe, the central axes of said first and second ultrasonic transducers are inclined with respect to a line perpendicular to said longitudinal axis of said pipe, and

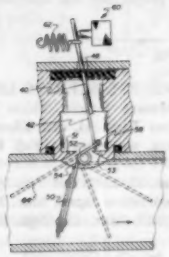
said ultrasonic propagation path is inclined with respect to said longitudinal axis of said pipe.

4,454,768

FLUID FLOW CONTROLLER

Harold K. Nansel, Waverly, Nebr., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Mar. 22, 1982, Ser. No. 360,322
Int. Cl.³ G01F 1/28
U.S. Cl. 73—861.76 4 Claims



1. A mechanism for detecting flow in a fluid carrying conduit comprising:

(a) a housing adapted for securement to said conduit in overlying sealing relationship and having a first opening to a second opening to said conduit, said housing including opposed projections extending into said first opening to provide a dam means in said first opening, a pin carried by said housing and extending across said first opening between said projections, and

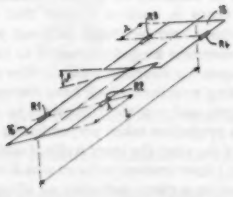
(b) flow detecting means shiftable in response to fluid flow through said conduit, said flow detecting means including a reactor member extending into said housing, pivot means providing a pivot point for said reactor member and an actuator pivotally connected to said reactor member and pivotally carried by said pin and extending into said conduit.

4,454,769

RADIAL FORCE MEASURING CELL

Horst-Rudolf Loos, Villars-sur-Glane, Switzerland, assignor to Vibro-Meter SA, Fribourg, Switzerland

Filed Jan. 11, 1982, Ser. No. 338,245
Claims priority, application European Pat. Off., Feb. 26, 1981, 81810063.8
Int. Cl.³ G01L 5/16, 1/22
U.S. Cl. 73—862.04 10 Claims



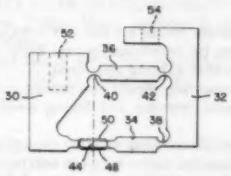
1. A radial force measuring cell comprising transducers responding to constraints of flexion produced by a radial force acting on the cell, said transducers delivering signals corresponding to the components of the radial force to which they are subjected and being arranged in a first and a second pair of transducers, the transducers of said first pair lying in a first plane passing through a longitudinal axis of said cell and being symmetrically disposed within said first plane with respect to said longitudinal axis of said cell, the transducers of said second pair lying in a second plane passing through said longitudinal axis of said cell and being symetrically disposed within said second plane with respect to said longitudinal axis of said cell, the angle enclosed between said first and second planes being 60°, said transducers being connected into a circuit delivering an output signal representative of the component of the radial force with respect to a given direction as a function of the angle of incidence of the radial force onto said cell.

4,454,770

TORQUE-INSENSITIVE LOAD CELL

Walter P. Kistler, King County, Wash., assignor to Kistler-Morse Corporation, Bellevue, Wash.

Filed Dec. 24, 1981, Ser. No. 334,252
Int. Cl.³ G01L 1/22
U.S. Cl. 73—862.65 12 Claims



1. A torque-insensitive load cell, comprising:

first and second spaced-apart force-receiving members;

a cantilever beam extending between said first and second force-receiving members, one end of said beam being connected to said first member in cantilever fashion so that the angle between said first member and said beam at the area of attachment therebetween is substantially constant, the other end of the said beam being connected to said second member through a relatively thin flexure hinge which is capable of transmitting forces to said beam while allowing said beam to freely pivot with respect to said second member;

a second beam extending between said first and second force-receiving members and having at least one of its ends connected to a respective force-receiving member by a flexure hinge which is capable of transmitting forces to said beam while allowing said beam to freely pivot with respect to said first and second members, said second beam having an effective length which is equal to the length of said first beam from its virtual pivot point to the flexure hinge connecting the end of said beam to said second member, said first and second force-receiving members being spaced apart solely by said cantilever beam and said spacer beam so that the longitudinal stress on said cantilever beam is unaffected by variations in the relative lengths of said cantilever beam and said spacer beam;

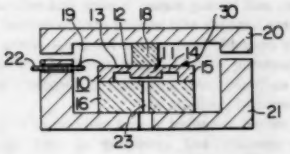
strain-sensing means mounted on said cantilever beam for providing an electrical indication of the flexing of said beam; and

means for applying a force between said first and second force-receiving members having a component which is perpendicular to said beams, thereby flexing said cantilever beam and causing said strain-sensing means to generate an electrical indication of the force applied between said force-receiving members.

4,454,771
LOAD CELL

Michitaka Shimazoe, and Yoshitaka Matsuoka, both of Mito, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 5, 1981, Ser. No. 318,361
Claims priority, application Japan, Nov. 7, 1980, 55-157313
Int. Cl.³ G01L 1/18
U.S. Cl. 73—862.68 15 Claims

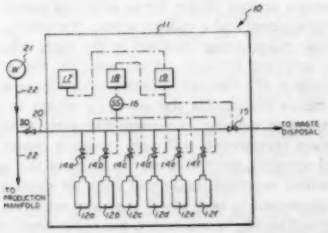


1. A semiconductor mechano-electrical converter comprising: a semiconductor diaphragm having first and second principal surfaces, one of said first and second principal surfaces being substantially flat, said semiconductor diaphragm including a first thick portion, a thin portion disposed at least partially around an outer periphery of said first thick portion and having at least two piezo-resistors formed therein to constitute at least part of a bridge circuit, and a second thick portion disposed around an outer pheripery of said thin portion; and load applying means for applying a load selectively across one of said first and second principal surfaces at said first thick portion and across the other of said first and second principal surfaces at said second thick portion, said load applying means including a first block secured to said first thick portion and a second block secured to said second thick portion, said first and second blocks being formed of one material selected from a group consisting of boro-silicate glass and silicon, and said semiconductor diaphragm being formed of an n-type silicon wafer incorporating said piezo-resistors of a p-conductivity type.

4,454,772
METHOD FOR SAMPLING A FLUID FROM A WELL

Paul J. Brunner, Spring, Tex.; Charles A. Christopher, Broken Arrow, Okla., and Robert G. Pindell, Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 6, 1981, Ser. No. 319,007
The portion of the term of this patent subsequent to Jun. 19, 2001, has been disclaimed.
Int. Cl.³ G01N 1/10
U.S. Cl. 73—863.31 2 Claims



1. A method for sampling a multi-phase fluid from a producing well comprising the steps of,

(a) injecting a sample of the fluid from the well through a plurality of inlet valves on a plurality of fluid sample containers,

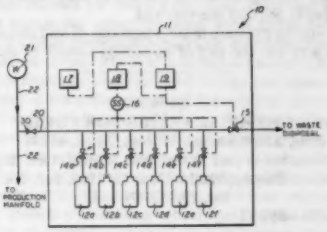
(b) controlling the flow of the well fluids responsive to a switch means through the valves into the fluid sample containers to be filled periodically in consecutive order, one after the other, from the well for providing an improved method that is more accurate and more precise whereby smaller samples may be utilized and thus less waste well fluid is discharged that may damage the environment from the single well, and

(c) flowing a multi-phase fluid product containing chemical species repeatedly from the producing well through a plurality of solenoid valves on the fluid sample containers into the fluid sample containers for detecting the change with time of the chemical concentrations of the flowing multi-phase fluid product after arriving at the producing well from an injection well whereby analysis of the sample provides reservoir description and for improved accuracy and precision of operation of the well fluid sampler.

4,454,773
TIME INTERVAL AUTOMATIC WELL MULTI-PHASE FLUID SAMPLER

Paul J. Brunner, Spring, Tex.; Charles A. Christopher, Broken Arrow, Okla., and Robert G. Pindell, Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 6, 1981, Ser. No. 319,005
The portion of the term of this patent subsequent to Jun. 19, 2001, has been disclaimed.
Int. Cl.³ G01N 1/10
U.S. Cl. 73—863.31 5 Claims



1. A time interval automatic well fluid sampler comprising,

a. a plurality of sample container means for receiving well fluid through a supply line from a single well of a plurality of wells,

b. inlet valve means for each of said sample container means,

c. timer means including an interval timer means for controlling each of said inlet valve means,

d. each of said inlet valve means being responsive to said interval timer means for filling its sample container means periodically, in consecutive order from said single well at precise time intervals between each filling for improved accuracy and precision of operation for requiring smaller fluid samples, and thus, discharges less waste well fluid that damages the environment,

e. said timer means includes purging timer means, and

f. said purging timer means being responsive to said interval timer means for starting precisely timed purging of said supply line from said single well prior to the filling of the next consecutive sample container.

4,454,774
METHOD OF SAMPLING A LIQUID IN A CONTAINER

Robert L. Pridgen, Palestine, Tex., assignor to Aluminum Company of America, Alcoa Center, Pa.

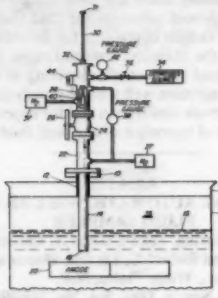
Filed Jan. 4, 1982, Ser. No. 336,728
Int. Cl.³ C25B 1/00; G01N 1/14
U.S. Cl. 73—863.81 10 Claims

1. In a method of sampling a liquid in a container, including the step of collecting a sample of the liquid through means extending into the liquid, said means defining a liquid-near portion and a liquid-remote portion when viewed relative to

the liquid in the container, said liquid-near portion being open to the liquid and being connected to said liquid-remote portion, the improvement comprising the steps of:

applying a gas to the liquid-near portion of said means;

applying a gas to the liquid-remote portion of said means;



creating a greater pressure in a gas-containing, liquid-remote portion of said means than exists in the container and in the gas-containing liquid-near portion thereof;

opening the liquid-remote portion of said means to the liquid-near portion thereof; and

reducing the pressure in both portions of said means in order to carry out the step of collecting sample of the liquid.

4,454,775

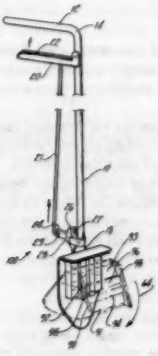
CHEMICAL TESTER FOR POOLS

Eugene Ellis, 22661 Karam, Warren, Mich. 48091

Continuation-in-part of Ser. No. 201,096, Oct. 27, 1980, abandoned. This application Jun. 10, 1982, Ser. No. 387,103

Int. Cl.³ G01N *1/12*

U.S. Cl. 73—864.51 **11 Claims**



1. An apparatus for testing pool water, said apparatus comprising:

an elongated handle member having one end and an opposite end;

a container for containing liquid said container being disposed adjacent to said opposite end of said elongated handle member, said container having an open end;

rotatable mounting means interconnected with said opposite end of said elongated handle member for rotatably mounting said container to said opposite end of said elongated handle member said rotatable mounting means being rotatable with said container between a first predetermined position wherein said open end of said container faces in the direction of said opposite end of said elongated handle member and a second predetermined position wherein said open end faces in the direction of said one end of said elongated handle member;

selectively detachable mounting means interposed between said rotatable mounting means and said container for detachably mounting said container to said rotatable mounting means;

biasing means interposed between said rotatable mounting means and said opposite end of said elongated handle member, said biasing means biasing said rotatable mounting means towards said second predetermined position;

selectively operable latch means for constraining said rotatable mounting means against the force of said biasing means such that said container is disposed in said first predetermined position; and

releasing means, mounted at said one end of said elongated handle member and extending to said opposite end thereof, for selectively releasing said selectively operable latch means so that said container is driven by said biasing means to rotate relative to said elongated handle member from said first predetermined position to said second predetermined position when said releasing means is actuated to release said latch means.

4,454,776

ELECTRIC CONTROL DEVICE FOR ACTUATING MEANS

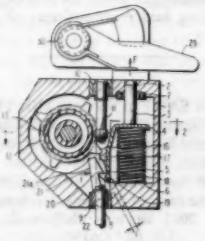
Jean Barge, Montbeliard, France, assignor to Aciers et Outillage Peugeot, Audincourt, France

Filed Nov. 6, 1981, Ser. No. 318,892

Claims priority, application France, Feb. 18, 1981, 81 03169

Int. Cl.³ G05G *17/00*

U.S. Cl. 74—2 **8 Claims**



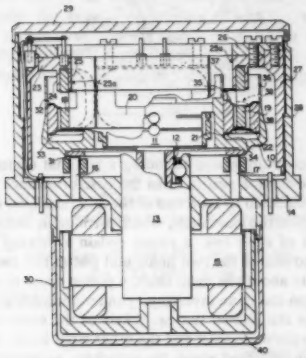
1. An electric control device for an actuating means having a linear displacement and a sudden action, comprising a case, the acutating means being disposed in the case, which case defines an aperture through which aperture the actuating means is capable of emerging, a spring cooperative with the actuating means for causing the actuating means to emerge from said aperture and abut an element connected to said case, locking means cooperative with said actuating means for retaining said actuating means against the action of said spring, a rotatable wheel mounted inside said case, an electric motor drivingly connected to said wheel, a power supply, a circuit connecting said supply to said motor, means for displacing said actuating means under the action of the wheel, in opposition to the action of the spring, at least to a position in which said actuating means is locked by said locking means, means operative by subsequent rotation of said wheel for unlocking said locking means, means for opening said circuit and consequently stopping the rotation of the wheel, after the locking of said actuating means by said locking means, but before the unlocking of said locking means, and means connected to a control means for closing said circuit and consequently rotating said wheel.

4,454,777

FLEXURE SUSPENDED GYRO UTILIZING DUAL SALIENT POLE MAGNETS

Walter J. Krupick, Succasunna; Peter L. Previte, Wayne, and Richard F. Cimera, Fairfield, all of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Oct. 19, 1981, Ser. No. 312,609
Int. Cl.³ G01C *19/28, 19/30*
U.S. Cl. 74—5.46 4 Claims



1. A flexure suspended gyroscope comprising:

a housing having a stator and rotor assembly and having a pair of bearings and having a bearing shaft with a common axis;

a universal hinge assembly supported by the bearing shaft coaxially therewith;

an open-ended flywheel located in the housing and supported by the universal hinge assembly coaxially therewith;

a plurality of torquer coils symmetrically positioned within the flywheel forming a ring-shaped torquer coil assembly disposed coaxially therewith;

a plurality of pairs of parallel spaced radially oriented torquer magnets located within the flywheel, forming two ring shaped torquer magnet assemblies disposed coaxially therewith, each pair of torquer magnets being equidistant to each respective torquer coil; and

mounting means for mounting the torquer coils to the housing for virtually ensuring that the torquer coils are not axially displaced relative to the flywheel and torquer magnets as a result of change of temperature; and

pickoff means including a plurality of pickoff poles for sensing gyroscope angular tilt; wherein

the flywheel has a closed end which is disposed adjacent to the pickoff means and is disposed between the pickoff means and the torquer coils thereby isolating the torquer coils from the pickoff means; wherein

the mounting means includes a plate and ring portion which is fabricated from a metal which minimizes the thermal gradients that occur from rapid gyroscope warmup and torquing rates; and wherein

the torquer magnets are saliently shaped for maximizing the flux density within the gap between the magnets and a respective coil, while minimizing fringing flux; and wherein

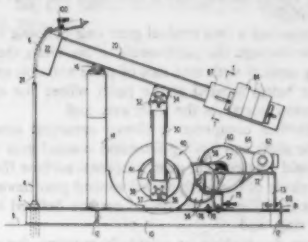
each torquer magnet has a pair of axially-spaced rings which are magnetically thermally sensitive in order to compensate for the drop in flux density of the magnets with increase in temperature.

4,454,778

PUMP JACK SYSTEM FOR OIL WELL

Virgil Camren, 405 N. 10th St., Parsons, Kans. 67357

Filed Apr. 21, 1981, Ser. No. 256,078
Int. Cl.³ F16B *13/00*
U.S. Cl. 74—41 13 Claims



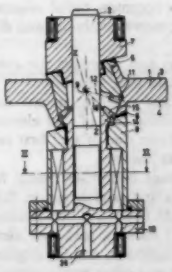
1. A pump jack system for an oil well comprising in combination, a walking beam adapted to be connected at one end portion thereof to a vertical pump rod and pivotable about a horizontal axis at a fulcrum intermediate its ends for reciprocating the pump rod, an arm pivotally connected to the beam intermediate its ends for rocking the beam about said horizontal axis, a pneumatic wheel mounted for rotation below the beam about a fixed horizontal wheel axis, said arm being pivotally connected to the wheel at a location on one side of the wheel offset from the wheel axis to drive the arm upon rotation of the wheel, a drive shaft mounted for rotation about a fixed horizontal drive shaft axis, said drive shaft extending transversely across said wheel in frictional engagement therewith for rotating the wheel, a motor, and speed reduction means operatively connected between the motor and the drive shaft for driving the drive shaft, said speed reduction means including a first motion transmitting wheel fixed to said drive shaft for rotating the same, a second motion transmitting wheel having a smaller diameter than the first wheel and being operatively connected to said first wheel for driving the same, said second wheel being operatively connected to said motor to be driven thereby.

4,454,779

DRIVE FOR A VARIABLE-STROKE SWASH PLATE MECHANISM

Jan Vos, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 16, 1979, Ser. No. 30,246
Claims priority, application Netherlands, May 2, 1978, 7804677
Int. Cl.³ F16H *23/00*
U.S. Cl. 74—60 7 Claims



1. A drive for a variable-stroke swash plate mechanism

comprising a rotatably journalled shaft and a plate mounted on the shaft such that the plate cannot rotate with respect to the shaft during steady state operation, the plate being adjustable with respect to the shaft so that the angle between the plate and the shaft can be varied, characterized in that

the plate is journalled on the shaft so that it is rotatable about an axis of plate rotation which intersects the shaft axis at an acute angle,

the plate comprises a first conical gear ring defining a conical surface through the pitch circle of the teeth, the cone axis being coaxial with said axis of plate rotation and the cone apex being located at the point where the axis of plate rotation intersects the shaft axis, and

the drive further comprises a sleeve arranged coaxially around the shaft and having a second conical gear meshing with said first conical gear, a conical surface through the pitch circle of the teeth of said second gear having the same apex location as the conical surface defined by the first gear ring, and

control means for locking or relatively rotating the sleeve and second gear with respect to the shaft.

4,454,780

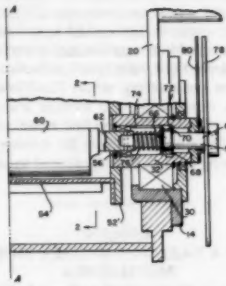
VIBRATORY MECHANISM

Robert F. Goehler, Greencastle; Jeffrey L. Addleman, Chambersburg, and Dana R. Rotz, Shippensburg, all of Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jul. 6, 1981, Ser. No. 280,939

Int. Cl.³ E01C *19/38*; F16H *33/10*

U.S. Cl. 74—87 **11 Claims**



1. A vibratory mechanism, especially for use with an earth-compacting drum, comprising:

a plurality of elongate elements having eccentrically-weighted, radially-disposed portions;

means supporting said elements for rotation about a common axis, with said portions in a first positioning wherein said portions are in common radial alignment therebetween, and in diverse, non-radially-aligned dispositions therebetween; and

means coupled to said elements for rotating the latter, in unison, about said axis; wherein

said supporting and rotating means comprise means for adjustably orienting one of said elements, relative to the other thereof, from one of said first and second positionings to the other thereof;

said orienting means comprises means for (a) moving said one element in a first axial direction, (b) rotatably indexing said one element from said one positioning to said other positioning, (c) moving said one element in a second, opposite axial direction, and (d) displacably securing said one element in said other positioning;

said one element is confined within said other element; and

said rotating means comprises a motor drivingly coupled to said other element.

4,454,781

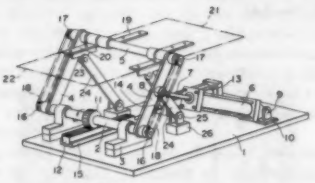
TURNOVER APPARATUS

Masaru Orii, Machida, Japan, assignor to Kabushiki Kaisha Orii Jidoki Seisakusho, Japan

Filed Jul. 6, 1982, Ser. No. 395,300

Int. Cl.³ F16H *21/44*

U.S. Cl. 74—99 R **1 Claim**



1. A turnover apparatus including a bed that rotatably supports a main shaft, a pair of links the base of each of which is rotatably connected to each end of the main shaft, an inverting shaft parallel to the main shaft, which is rotatably connected to the top end of each link, a piston rod in a driving cylinder connected to one of the two links, said piston rod causing the link to rotate about the main shaft, a pinion fixed to the main shaft, a piston rod in an inverting cylinder connected to a rack that engages the pinion, two sprockets of the same diameter, one fixed to the main shaft and the other fixed to the inverting shaft, a chain stretched across the sprockets, an inverting plate fixed to the inverting shaft horizontally, a receiving plate rotatably connected to the inverting shaft, the receiving plate being fitted with a guide mechanism that causes the receiving plate to rotate around the inverting shaft from the horizontal to a vertical downwardly bent position as a result of rotation of the links in such a direction that the inverting plate is retracted.

4,454,782

TORQUE TRANSMITTING BODY FOR TRACTION DRIVE TRANSMISSIONS AND NORMAL FRICTION FORCE DEVELOPING METHOD

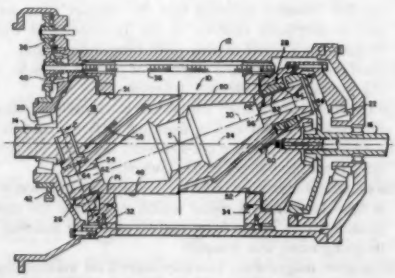
Yves J. Kemper, Birmingham, Mich., assignor to Vadetec Corporation, Troy, Mich.

PCT No. PCT/US80/00583, 371 Date Dec. 23, 1981, 102(e) Date Dec. 23, 1981, PCT Pub. No. WO81/03366, PCT Pub. Date Nov. 26, 1981

PCT Filed May 19, 1980, Ser. No. 336,399

Int. Cl.³ F16H *15/16, 13/00, 15/50*

U.S. Cl. 74—191 **8 Claims**



1. In a continuously variable transmission having an alpha body rotatable about a first axis, a beta body supported from said alpha body and defining rolling surfaces of revolution about a second axis inclined at an angle with respect to and intersecting and first axis at a point of axes intersection, and an omega body defining rolling surfaces of revolution about said

first axis, the rolling surfaces on said beta and omega bodies being in rolling frictional engagement at two diametrically opposite points of contact located in a plane containing said first and second axes, the improvement comprising:

means to support said beta body from said alpha body with freedom of said beta and omega bodies to be self-centering on said point of axes intersection; and

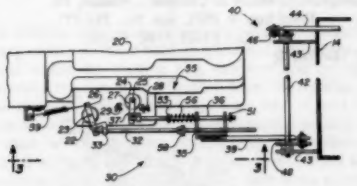
means to develop a radial thrusting force between said alpha body and said beta body, said thrusting force being applied perpendicular to said second axis and in a direction toward one of the rolling surfaces on said omega body, whereby the angular orientation of said first and second axes together with the freedom of said beta and omega bodies to be self-centering operates to resolve said thrusting force equally at said two points of contact.

4,454,783

DIESEL ENGINE CONTROL LINKAGE

Randall L. Sierk, New Holland, and Lonny R. Freitag, Lancaster, both of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Apr. 19, 1982, Ser. No. 369,692
Int. Cl.³ G05G *9/08*
U.S. Cl. 74—471 R **14 Claims**



1. In a diesel engine having a first control operable to terminate the flow of fuel to the engine through manipulation of a first linear control rod and a second control operable through manipulation of a second linear control rod to vary the rate of flow of fuel to said engine from a slow speed to a fast speed, an improved control linkage comprising:

a bracket slidably mounted on both said first and second control rods;

an actuation member affixed to said bracket such that selective manipulation of said actuation member will effect a sliding movement of said bracket along the length of said first and second control rods in a first direction and an opposing second direction, respectively;

first and second stops affixed to said second control rod, said first stop being positioned such that when said bracket moves in said first direction said bracket will engage said first stop and effect a movement of said second control rod to increase the rate of flow of fuel to said engine, said second stop being positioned such that movement of said bracket in said second direction will effect engagement of said second stop to effect movement of said second control rod to decrease the rate of flow of fuel to said engine;

A third stop affixed to said first control rod such that said bracket will engage said third stop after said second control rod has been moved in said second direction to decrease said flow rate to a predetermined value, further movement of said bracket in said second direction effecting a termination of the flow of fuel to said engine; and

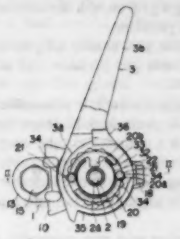
lost motion means operatively associated with said second control to permit the movement of said first control rod in said second direction after said bracket has engaged said third stop without effecting further movement of said second control rod.

4,454,784

SPEED CHANGING DEVICE

Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Nov. 2, 1981, Ser. No. 317,342
Claims priority, application Japan, Nov. 19, 1980, 55-166899[U]
Int. Cl.³ G05G *5/20*; G08B *3/02*; B62K *23/06*
U.S. Cl. 74—475 **8 Claims**



1. A speed-change device comprising:

a fixing member having a lever shaft;

an operating lever provided with a boss supported rotatably to the fixing member and having an operating portion, the boss at the lever being provided with a shaft bore fitted onto the lever shaft and a cavity larger in diameter than the shaft bore, the fixing member having a support member fitted circumferentially with respect to the cavity;

a plurality of recesses formed at one of the boss and the support member;

a pair of engaging members provided at the other of said boss and support member engageable with the recesses, the engaging members being exposed toward a center of said cavity, each of engaging members elastically engaging with the recesses; and

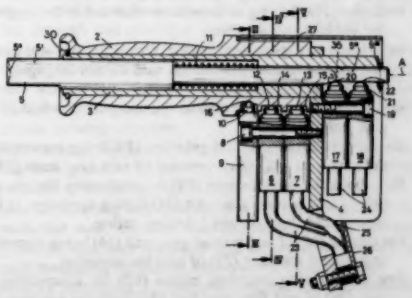
a ring spring housed within said cavity at its central side for biassing said engaging members into elastic engagement with said recesses.

4,454,785

CONTROL ELEMENT FOR AGRICULTURAL MACHINE

Josef Pürrer, Gottmadingen, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG Zweigniederlassung Fahr, Gottmadingen, Fed. Rep. of Germany

Filed Oct. 16, 1981, Ser. No. 312,130
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1980, 3039584
Int. Cl.³ G05G *1/04*; H01H *3/00*
U.S. Cl. 74—523 **6 Claims**



1. A control element for a machine, said element comprising:

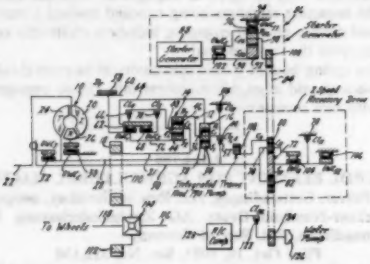
a lever pivotal about and generally perpendicular to a horizontal lever axis through angularly offset positions associated with respective operational levels of said machine;
a handle carried on said lever remote from said lever axis and centered on a handle axis substantially parallel to and offset from said lever axis;
a grip carried on said handle and rotatable thereon about said handle axis between at least one grip end position and an angularly offset grip central position;
means including a grip switch actuatable by said grip only in said grip end position;
a thumb-operable pin axially displaceable in said handle between an outer pin position and at least one inner pin position;
means including a pin switch actuatable by said pin only to said inner pin position said lever having an outer end provided with a cylindrical tube centered on said handle axis, said pin being axially displaceable inside said tube and said grip being angularly displaceable on said tube;
biasing means for urging said pin into said outer pin position; and
means for retaining said grip releasably in said central position, said grip being formed with a radially outwardly open notch, said means for retaining including a spring-loaded member radially inwardly engageable in said notch.

4,454,786

FOUR SPEED TORQUE CONVERTER TRANSAXLE AND ACCESSORY DRIVE SYSTEM

Thomas R. Stockton, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 14, 1981, Ser. No. 301,795
Int. Cl.³ F16H *47/08, 37/06, 37/08;* **F16D** *19/00*
U.S. Cl. 74—688 **6 Claims**



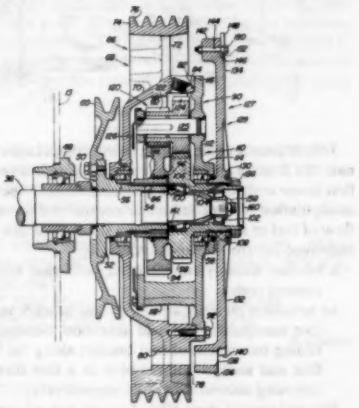
1. A multiple ratio power transmission mechanism for an engine driven vehicle comprising a hydrokinetic torque converter and a pair of simple planetary gear units;
said converter having an impeller connected to the engine of the vehicle and a turbine;
each planetary gear unit having a ring gear, a sun gear, a carrier and planet pinions on said carrier engaging said ring and sun gears;
said turbine being connected to the sun gear of a first of said gear units (16);
the carrier (40) of said first gear unit (16) being connected to the ring gear (42) of the second of said gear units (14);
forward drive brake means (58) for anchoring the sun gear (44) of said second gear unit (14) during operation in first, second and third forward driving ratios;
the carrier (48) of said second gear unit (14) being connected to a driven member (21) of said transmission;
first overrunning coupling means (62) for connecting the ring (36) of said first gear unit (16) with the sun gear (44) of said second gear unit (14);
first clutch means (66) for connecting the ring gear (36) of said first gear unit (16) to the carrier (48) of said second gear unit (14);
second clutch means (52) for connecting the impeller to the carrier (40) of the first gear unit (16) during operation in the third and fourth driving ratios;
brake means (54) for anchoring the carrier (40) of said first gear unit (16) during reverse drive operation;
second overrunning coupling means (32) between said impeller and said turbine for preventing the latter from overrunning the former during fourth speed ratio operation;
and third clutch means (70), 68) for connecting the ring gear (36) of said first gear unit (16) to the carrier (48) of said second gear unit (14), said third clutch means comprising a third overrunning coupling means (68) and a selectively engageable friction clutch (70) arranged in series relationship;
said friction clutch (70) being engaged during operation in second speed ratio operation wherein torque is distributed from said ring gear (36) of said first gear unit (16) and through said third overrunning coupling means (68) and said friction clutch (70).

4,454,787

VARIABLE DRIVE FOR A HARVESTER FUNCTIONAL ELEMENT

Mahlon L. Love, Osco, and Leon J. Corkery, Moline, both of Ill., assignors to Deere & Company, Moline, Ill.

Filed Sep. 4, 1981, Ser. No. 299,277
Int. Cl.³ F16H *3/44, 37/00*
U.S. Cl. 74—781 R **5 Claims**



1. A transmission for the drive system of a mobile harvester functional element, the element being connected to a driven shaft, and the harvester having a power source and a frame, comprising:
a pulley carried concentrically by the driven shaft and having a body including a gear train with a plurality of gears including an output gear directly and drivingly connected to the shaft and an input gear journalled concentrically with the shaft and intermediate gear means for transmitting power between the input and output gears;
control means operable alternatively to couple the input gear to the pulley body for a first drive mode and to tie the input gear to the frame of the harvester for a second drive mode including a torque element drivably connected to and non-rotatable with respect to the input gear and a control link for connecting the torque element to the frame of the harvester, said link, in operation, being under load, and automatic disconnect means connecting the torque element to the control link and operable to discon-

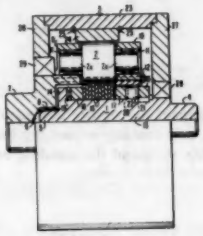
nect the control link from the torque element at a predetermined load so as to limit the torque input to the transmission; and drive means connecting the pulley to the power source.

4,454,788

TRACTION ROLLER TRANSMISSION WITH PREDETERMINED TRANSMISSION RATIO

Charles E. Kraus, Austin, Tex., assignor to Excelermatic Inc., Austin, Tex.

Filed Dec. 10, 1981, Ser. No. 329,336
Int. Cl.³ F16H *13/06, 13/00*; F16D *19/00*
U.S. Cl. 74—798 **3 Claims**



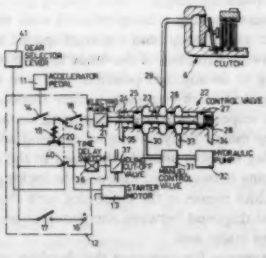
1. A traction roller transmission comprising: a traction ring structure having an inner traction surface; a sun roller centrally disposed within the traction ring structure and having a circumferential traction surface spaced from the traction surface of said traction ring structure, at least one of said traction surfaces being formed by the circumferential surface formed by a stack of wave spring rings; planetary traction rollers supported in the annular space between said traction surfaces; pressure rings disposed axially adjacent said wave spring rings; and axial cam means associated with at least one of said pressure rings and adapted to force said one pressure ring toward the other so as to deform said wave spring rings to thereby change the diameter thereof for forcing said traction rollers into firm frictional engagement with said inner and circumferential traction surfaces.

4,454,789

DRIVE TRAIN FOR A VEHICLE

Lothar Kaspar, Wolfsburg, and Ulrich Seiffert, Brunswick, both of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed May 19, 1981, Ser. No. 265,141
Claims priority, application Fed. Rep. of Germany, May 21, 1980, 3019273
Int. Cl.³ B60K *41/02*; F02N *17/00*
U.S. Cl. 74—850 **1 Claim**



1. In a vehicle with an accelerator pedal, an internal combustion engine and an automatic transmission, including an input shaft, a hydrodynamic torque converter, a planetary gear train and hydraulically actuated control elements with at least one clutch for engaging the forward gears of said gear train, coasting means responsive to release of the accelerator pedal for automatically disengaging the engine from said transmission by releasing said clutch and then turning the engine off while said vehicle is coasting, and apparatus for restarting and re-engaging said engine conprising:

a hydraulic pump driven by the transmission input shaft for supplying fluid to said control elements;

a starter motor for turning said engine; and

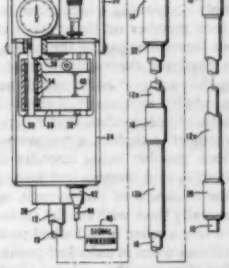
means response to depression of said accelerator pedal and the forward gear selection of said transmission for actuating said starter motor to start said engine and drive said hydraulic pump to power said control elements and re-engage said engine.

4,454,790

BOLT STRETCH MEASUREMENT DEVICE

Stuart L. Rieben, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 30, 1982, Ser. No. 373,596
Int. Cl.³ B25B *29/02*; F16B *31/02*
U.S. Cl. 81—57.38 **11 Claims**



1. A device for measuring elongation of a tensile member having an axial bore, said device comprising:

an extension tube extending into said bore;

a measuring rod having a length which is independent of the length of the tensile member being measured and extending through said extension tube and into said bore;

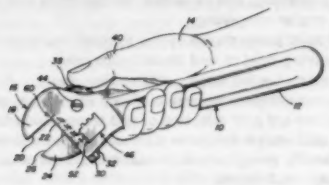
said measuring rod and said extension tube being movable relative to each other and each contacting a point along said bore at longitudinally spaced locations, wherein the distance between said points changes as the length of said tensile member changes;

a slide assembly slidably disposed along and having an opening through which said measuring rod passes and being capable of being secured to said measuring rod;

means for securing said slide assembly to said measuring rod such that once said slide assembly is secured, the distance between said slide assembly and the point of fixation of said measuring rod along said bore, is constant; and

means for measuring a change in longitudinal displacement between said slide assembly and one end of said extension tube, wherein the change in said displacement is proportional to elongation of said tensile member.

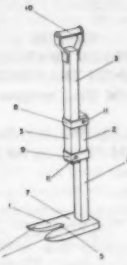
4,454,791
LOCKABLE ADJUSTABLE WRENCH
William E. Seward, III, P.O. Box 266, Claremont, Va. 23899
Filed May 11, 1982, Ser. No. 377,065
Int. Cl.³ B25B *13/14*
U.S. Cl. 81—133 **2 Claims**



1. A lock assembly for an adjustable jaw wrench of the type including a stationary jaw having transversely opposed, generally parallel flat surfaces, a movable adjustable jaw, a rack gear having spur teeth on the adjustable jaw, a rotatable gear having spur teeth on the periphery thereof meshing with the rack gear, means supporting the rotatable gear from the stationary jaw for rotation about a transverse axis perpendicular to the flat surfaces, said rotatable gear being manually rotatable for moving the adjustable jaw in relation to the stationary jaw, said wrench including an elongated handle rigid with the stationary jaw, said movable adjustable jaw being slidably supported on the wrench, said rotatable gear having a portion of the peripheral spur teeth projecting from a peripheral surface of the wrench extending between the flat surfaces to enable access thereto for rotation by exerting tangential force thereon by using the thumb of the hand grasping the wrench by the handle to enable one-hand adjustment of the wrench, said lock assembly comprising a lock member, means movably mounting the lock member on the wrench said lock member including means thereon engaging the rack gear and separate means thereon engaging the rotatable gear thereby simultaneously locking the rack gear and rotatable gear to the wrench and preventing relative movement of the rack gear and rotatable gear in relation to each other, said means movably mounting the lock member including a transverse opening in the wrench, said lock member being laterally slidably and non-rotatably received in said opening and having a length generally equal to the thickness of the wrench, said lock member having ends generally flush with the flat surfaces of the stationary jaw of the wrench when in its locked position and one end projecting therefrom when in unlocked position, said means on the lock member engaging the rack gear including spur teeth on the lock member slidably meshing with the spur teeth on the rack gear, said separate means meshing with the spur teeth on the rotatable gear including separae spur teeth on the lock member slidably meshing with the rotatable gear spur teeth, the spur teeth on the lock member being completely disengaged from the teeth on the rotatable gear and rack gear when in unlocked position.

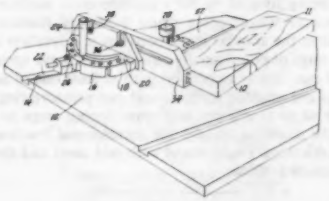
4,454,792
EXTENDING BAR STAKE PULLER
Wesley E. Burris, P.O. Box 245, Socorro, N. Mex. 87801
Filed Dec. 16, 1982, Ser. No. 434,571
Int. Cl.³ B25B *19/00*
U.S. Cl. 81—463 **3 Claims**

1. An extending bar stake puller, comprising
a foot, having claws, and
a standing bar rigidly affixed at one end to the top of the foot, and
an impact lug rigidly affixed to the free end of the standing bar; said impact lug being sized and shaped to form an aperture and slideably accept a slide bar therein adjacent to the standing bar, and
the slide bar, and
a handle rigidly affixed to one end of the slide bar, and said slide bar being inserted into the aperture formed by the impact lug in a manner such that the plane of the handle is parallel to the direction of the claws on the foot, and



a running impact lug rigidly affixed to the free end of the slide bar, said running impact lug being sized and shaped to slideably surround the standing bar.

4,454,793
ATTACHMENT FOR A MITER GAUGE
Donald Strong, 20425 Beatrice, Livonia, Mich. 48152
Filed Apr. 16, 1982, Ser. No. 368,991
Int. Cl.³ B27B *25/10*
U.S. Cl. 83—421 **1 Claim**

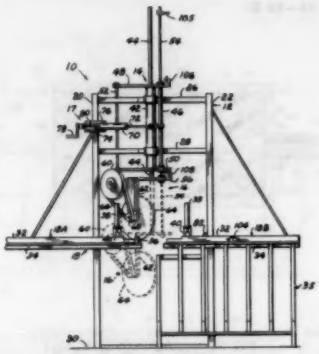


1. An attachment for a miter gauge having a body having a workpiece-engaging surface, an arm pivotally connected to the body, and means for locking the arm at a selected angle with respect to the workpiece-engaging surface, said arm being slideably receivable in the slot of a work table for guiding the gauge body along a linear path of motion with respect to a table saw blade, said attachment comprising:
a fence having an elongated work-engaging surface and means for attaching the fence to the miter gauge body, the fence having an elongated slot having a neck forming a narrowed opening;
stop means having a body aligned with the bottom of the miter gauge body, and a pair of spaced tongues slideably received in the slot of the fence so as to be movable therealong to an adjusted position, said stop means having an elongated work-engaging surface disposed at a 90° angle with respect to the work-engaging surface of the fence;
the stop means body having an opening adjacent the slot;
a locking member slidably disposed in the stop means body opening between said tongues, the locking member having shoulder means in the fence slot such that the neck of the slot is disposed between the shoulder means and the stop means body; and
locking means for camming the shoulder means toward the stop means body whereby the neck of the fence slot is clamped between the shoulder means and the stop means body.

4,454,794
TRUSS WEB SAW

Jack L. Thornton, P.O. Box 222400, Carmel, Calif. 93922

Filed Apr. 29, 1982, Ser. No. 373,190
Int. Cl.³ B27B 5/20
U.S. Cl. 83—471.3 9 Claims



1. A power saw for automatically cutting truss members, comprising:

upright frame means having a front;

ram means including a ram having a double end piston rod vertically mounted on the front of said frame means;

power saw means including a power driven saw mounted on the depending end of said piston rod for vertical reciprocal movement therewith;

guide means horizontally mounted on the front of said frame means for holding an intermediate portion of a workpiece in the path of vertical movement of said saw;

indexing means connected with and operated by said power saw means for automatically turning said power saw means about the vertical axis of said piston rod between predetermined angular limits with respect to the horizontal axis of said guide means at the respective upper and lower limits of movement of said piston rod; and,

control means including valves and tubing connected with a source of fluid pressure for continuously operating said ram means and said indexing means in sequence in response to movement of a workpiece in one direction.

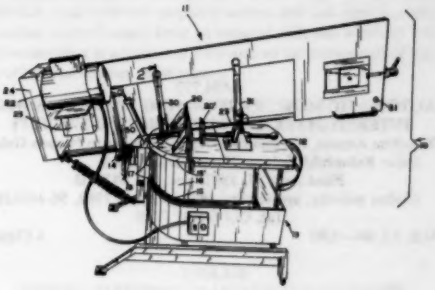
4,454,795
BAND SAW

Wayne S. Ellis, 401 S. Marietta, Verona, Wis. 53593

Filed Aug. 24, 1982, Ser. No. 410,935
Int. Cl.³ B23D 53/06, 55/08
U.S. Cl. 83—820 5 Claims

1. A band saw configured with a frame embodying an elongated rigid member extending substantially tangentially between blade mounting pulleys which are carried by said frame wherein the return run of blade between pulleys is disposed in near adjacency to said elongated member and the cutting run of blade is disposed distant from said elongated member, said band saw further configured with blade guides mounted for being adjustably spaced one from the other and disposed to twist and return twist said blade during said cutting run by rotating and re-rotating the plane of said blade through ninety degree angular rotations from a vertical plane, an improvement comprising

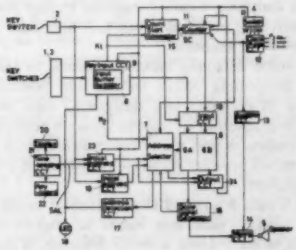
providing substantially unobstructed clearance between said cutting run and said return run of said blade intermediate said blade guides by said blade guides being mounted laterally offset on said elongated rigid member thereby to provide vertical cutting depth clearance not substantially less than the diameter of said blade mounting pulleys wherein said elongated rigid member is configured with a longitudinally extending "v" configured cross-sectional groove and said blade guides are provided with mounting arms which depend from attachment on said rigid elongated member, the upper extremities of said mounting arms being configured as yokes for being received about a portion of said elongated rigid member, each said yoke being provided with threaded clamp means having a substantially conically conifgured end extremity for engaging said "v" configured cross-sectional groove with apexes of said end extremity configurations being aligned downwardly offset from the apex of said "v" configured cross-sectional groove thereby enabling said blade guide mounting arms to be drawn into firm lateral and elevational contact with said elongated rigid member to insure precise and rigid positioning and alignment of said blade guides.



4,454,796
PROGRAMMABLE MUSICAL INSTRUMENT

Tomohiro Inoue, Nara, and Akira Tanimoto, Kashihara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 28, 1981, Ser. No. 258,312
Claims priority, application Japan, Apr. 28, 1980, 55-58658[U]
Int. Cl.³ G10H 1/40, 7/00
U.S. Cl. 84—1.03 7 Claims



1. A musical instrument comprising:

means for selecting a tempo;

means for generating an audible signal representative of the tempo;

input means for entering pitch information and duration information of a note during generation of said audible signal;

counting means for determining the time during which said input means is actuated for fixing the duration information;

memory means for storing the pitch information and the duration information; and

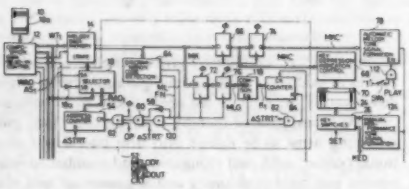
output means operatively connected to said memory means for developing the pitch information and the duration information.

4,454,797

AUTOMATIC MUSIC PERFORMING APPARATUS WITH INTERMEDIATE SPAN DESIGNATING FACULTY

Takehisa Amano, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 27, 1982, Ser. No. 412,303
Claims priority, application Japan, Sep. 7, 1981, 56-140521
Int. Cl.³ G10H 7/00
U.S. Cl. 84—1.03 6 Claims



1. An apparatus for automatically performing a music, comprising:

note data memory means storing a plurality of note data for forming a music composition comprised of paired combination of pitch data and duration data;

readout means connected to said note data memory means for successively reading out said note data by successive accessing of the note data stored in said note data memory means;

start position designating means for designating a start position in said music composition at which a performance based on said note data having been read out is to be started;

position searching means connected to said readout means for searching positions of readout note data contained in said music composition;

start position detecting means connected to said start position designating means and to said position searching means to compare said designated start position with searched positions to thereby detect a performance starting position in said music composition upon coincidence established between these two positions as a result of the comparison;

control means connected to said readout means and to said start position detecting means to control said readout means, in accordance with the detection of the designated start position in said music composition, to successively access the note data stored in said note data memory means at a speed determined by each duration data contained in each of said note data beginning with the note data at the designated start position, to thereby form a performance signal by virtue of the note data read out from said note data memory means as a result of said accessing; and

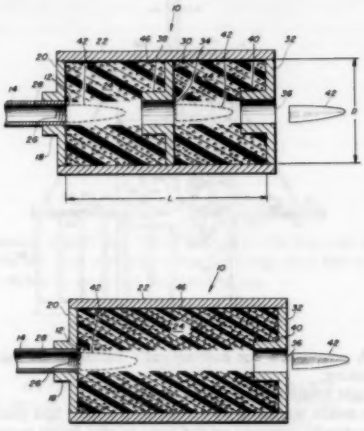
musical tone forming means connected to said readout means to form musical tone signals having respective pitches and durations defined by said performance signal.

4,454,798

FOAM FILLED MUZZLE BLAST REDUCING DEVICE

John W. Shea, King George, Va., and Larry L. Pater, Zelienople, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 25, 1982, Ser. No. 352,448
Int. Cl.³ F41F 17/12
U.S. Cl. 89—14 B 3 Claims



1. A device for reducing the blast and flash from the muzzle of a gun barrel as a projectile is discharged comprising:

a foam of the type having at least one portion thereof existing in a thin film liquid form when in the foam state, and where the foam consists of water and a synthetic foaming agent and where the foam has an expansion ratio in the range of 10 to 1 to 140 to 1,

with, a hollow container defining a chamber filled with said liquid foam said container including an inlet hole and an outlet hole coaxially aligned with the chamber to allow the projectile to pass through said container and foam, whereby the blast and flash associated with the discharge of the projectile from the barrel are substantially reduced.

4,454,799

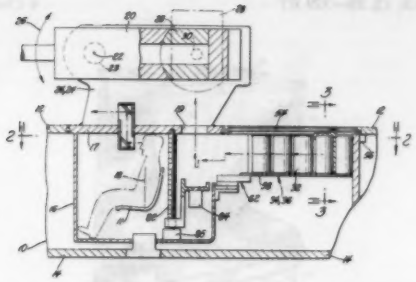
AMMUNITION STORAGE AND WEAPON LOADING SYSTEM

Jaunutis B. Gilvydis, Oakland, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 26, 1982, Ser. No. 382,038
Int. Cl.³ F41H 7/06
U.S. Cl. 89—47 7 Claims

1. In a military vehicle comprising a hull having a longitudinal centerline, a circulr basket located in the hull for powered rotary motion in the azimuth direction, and an external weapon mounted atop the basket in the space above the hull: the improvement comprising means for storing individual rounds of ammunition within the hull outside the basket; said ammunition storing means comprising structure operable to position the stored rounds in parallel rows, with each stored round assuming an upright attitude; a carrier for an individual round movable outside and along the basket perimeter in arc centered on the basket rotational axis; first mechanical means for transferring individual rounds of ammunition from the ammunition storing means to the carrier when the carrier is stationed on the hull longitudinal centerline; said first mechanical transfer means being constructed so that the round is maintained in an upright attitude while it is being moved from the storing means into the carrier; a mechanical round rammer movably located

within the basket for upward motion to insert an individual round into the weapon; and second mechanical means for transferring an individual round from the carrier to the rammer; said second mechanical transfer means being constructed to maintain the round in an upright attitude while it is being moved from the carrier into the rammer; said basket and carrier being independently rotatable; said second mechanical transfer means being movable on a radial line through the basket rotational axis, whereby the second transfer means is able to transfer an individual round of ammunition from the carrier into the rammer when the basket is in a variety of different rotated positions.



4,454,800

ACTIVE MECHANICAL HYDRAULIC CONTROL APPARATUS

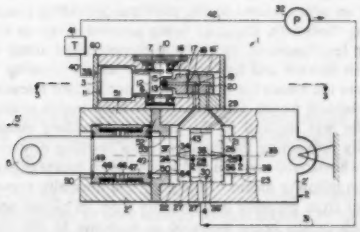
Rudolf Köepper, Vaihingen-Enz, and Karl-Joachim Rowold, Friedrichsdorf, both of Fed. Rep. of Germany, assignors to Feinmechanische Werke Mainz GmbH, Mainz-Mombach, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 89,855, Oct. 31, 1979, abandoned. This application Feb. 22, 1982, Ser. No. 351,279

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1978, 2848339

Int. Cl.³ F15B *15/22, 13/04*

U.S. Cl. 91—51 **10 Claims**



1. An active mechanical, hydraulic control apparatus, comprising housing means **(2)**, a bore in said housing means, a drive member **(4, 5)** having a piston at one end and a piston rod at the other end for connection to a driven member, said piston being axially movable in said bore, said bore having first and second chambers, said piston having first and second piston portions facing the respective first and second chambers to form follower amplifier means, said piston further having a reduced diameter portion **(28)** forming a third chamber intermediate said first and second piston portions, pump means **(32)** operatively connected with its pressure output to said third chamber, piston position responsive flow valve means **(33, 34)** in said first and second piston portions for connecting said third chamber with said first and second chambers with respective flow passage cross-sectional areas which vary responsive to the back and forth movement of the piston means in said bore to thereby form piston center position control means, acceleration sensing mass means **(3)** journalled for movement in said housing, mass means position responsive further valve means **(13, 14, 15)** forming a preamplifier, duct means in said housing operatively connecting said further valve means **(13, 14, 15)** to said first and second chambers respectively and return flow conduit means operatively connecting said further valve means to a suction inlet of said pump means, whereby said drive member, said follower amplifier means and said piston center position control means form an integral unit, and whereby said drive member is adjusted in response to the movement of said acceleration sensing mass means.

4,454,801

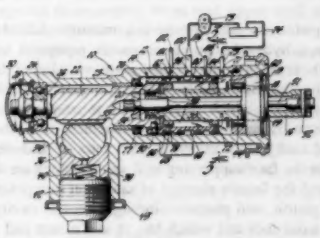
POWER STEERING GEAR AND OPEN CENTER ROTARY VALVE THEREFOR

Chris R. Spann, Decatur, Ala., assignor to General Motors Corporation, Detroit, Mich.

Filed May 7, 1982, Ser. No. 375,715

Int. Cl.³ F15B *9/10*

U.S. Cl. 91—375 A **6 Claims**



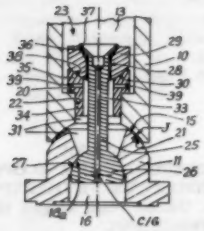
1. A rotary open center valve and housing assembly for supplying pressure oil from a hydraulic input selectively to first or second hydraulic outputs in the housing comprising a rotatably input member extending into said housing of the assembly, first valve means operatively connected to said input member for rotary movement therewith, a plurality of on transfer slot means arcuately spaced from one another formed in the outer surface of said first valve means, a valve body operatively mounted within said housing for limited turning movement on and relative to said first valve means, said valve body having a plurality of rectilinear open ended oil pressure slots formed internally therein hydraulically connected to said hydraulic input and a plurality of rectilinear open ended oil return slots serially interposed between said oil pressure slots, said housing having an exhaust chamber and an oil return port connected thereto, end ring means sealed in said valve body closing the ends of said oil pressure slots, said oil return slots having rectilinear axial passages extending through at least one end of said valve body and over said end ring means which connect into said exhaust chamber to exhaust oil from said input flowing through said pressure slots and then through said transfer slots into said return slots bypassing said hydraulic outputs when said first valve means and valve body are in a first relative position, said chamber being operative to exhaust oil from said first output while said valve is supplying oil to said second output in a second relatively rotatable position.

4,454,802

PISTON ASSEMBLY FOR A FLUID MECHANISM WITH REACTION PLATE, COMPLETE WITH SLIPPER BLOCK

Gérard M. Caillias, Compiegne, and Jean-Pol Mathieu, Villers Sous Saint Leu, both of France, assignors to Poclain Hydraulics, France

Filed Oct. 14, 1981, Ser. No. 311,314
Claims priority, application France, Oct. 28, 1980, 80 23030
Int. Cl.³ F01B 31/10, 13/04
U.S. Cl. 92—158 3 Claims



1. A piston assembly for use in a pressurized fluid mechanism such as a hydraulic pump or motor equipped with pistons which bear against a reaction plate via slipper blocks, said assembly comprising such a piston and the slipper block associated therewith, which slipper block is coupled to one end of said piston by means of a ball-and-socket joint, the male element of said joint comprising that part of said slipper block opposite the face supporting said slipper block on the reaction plate, and the female element of said joint comprising said end of said piston, said piston including a central cavity issuing at its two axial ends and which has, at said piston end comprising said female element of said joint, a through hole formed by a shoulder of smaller cross-section than the adjacent part of said central cavity and said slipper block including an inner cavity open to the reaction plate and a through hole which connects said inner cavity of said slipper block with said male element of said joint, wherein:

a bolt comprising a bolt head and a bolt stem and a nut threaded on said bolt stem hold said slider block to said piston, said stem passes through said through holes and one of said bolt head and said nut is disposed for contact with a supporting surface on said central cavity and the other of said bolt head and nut is disposed for contact with a supporting surface on said inner cavity;

said supporting surfaces for said nut and said bolt head on said inner cavity and said central cavity form ball-and-socket joints with said bolt head and said nut;

said through holes in said piston and said slipper block form an enclosure in said assembly between said slipper block and said piston closed at the ends thereof by said bolt head and nut;

a bore through said bolt stem and bolt head provides hydraulic communication between said central and inner cavities; and

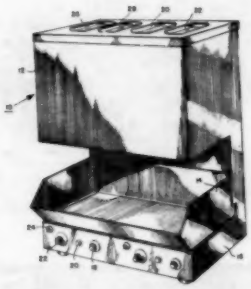
said one of said bolt head and nut rests against said shoulder via a bush in said through hole in said shoulder, said bush comprising a head interposed between said shoulder and said bolt head or nut and a pipe connecting said enclosure with said central cavity provided in said bush.

4,454,803

TOASTER

Fred G. Wolf, West Long Branch, and William C. Schneider, Toms River, both of N.J., assignors to Alco Foodservice Equipment Company, Miami, Fla.

Filed Jul. 22, 1982, Ser. No. 400,987
Int. Cl.³ A47J 37/08
U.S. Cl. 99—329 RT 4 Claims



1. A toaster comprising a toasting compartment having an elongated horizontal cross-section and having upper and lower ends, an opening at its upper end for the insertion of a slice of bread, guide means for maintaining the slice of bread substantially vertical while in the toasting compartment, and a discharge opening at the lower end, releasable bread support means within the toasting compartment for engaging the lower edge of the slice of bread within the toasting compartment and temporarily maintaining the slice of bread in the toasting compartment with its lower edge spaced above the discharge opening, an elongated door located at the discharge opening and arranged to close the discharge opening, means for establishing a toasting cycle and means responsive to the toasting cycle-establishing means for opening the door and releasing the bread support means at the end of the toasting cycle, said bread support means comprising means providing a normally horizontal platform pivoted on an axis extending lengthwise of the toasting compartment along one of the sides thereof, and having an arm secured to the platform-providing means and pivoting therewith, the door being pivoted along an axis extending lengthwise of the toasting compartment along one of the sides thereof and having follower means pivoting therewith, and the means for opening the door and for releasing the bread support means comprising first latch means engageable with the arm secured to the platform-providing means and normally preventing the platform from pivoting downwardly from its horizontal position and second latch means engageable with the follower means of the door and normally preventing the door from pivoting downwardly from its closed position, the latch means being movable in response to the toasting cycle-establishing means to positions allowing the door and platform-providing means to pivot downwardly and release a slice of toast through the discharge opening.

4,454,804

APPARATUS FOR INCORPORATING ADDITIVES IN EXTRUDED FOODS

Michael G. McCulloch, Northridge, Calif., assignor to Carnation Company, Los Angeles, Calif.

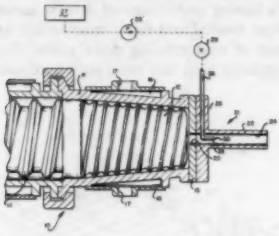
Filed Jun. 18, 1981, Ser. No. 274,973
Int. Cl.³ A23J 1/00
U.S. Cl. 99—348 5 Claims

1. An apparatus for producing an expanded food product having an additive incorporated therein, which comprises

an extruder-cooker provided with a die plate having a die

orifice therein through which an expandable food material is extruded,

a tubular extrusion die mounted on said die plate, said tubular extrusion die comprising a tubular member having a cylindrical bore positioned over said die orifice with the die orifice and the cylindrical bore having substantially the same internal diameter and cross-sectional shape, and



said cylindrical bore being axially aligned and contiguous with said die orifice to form a continuous channel with said die orifice through which the expandable food material is extruded,

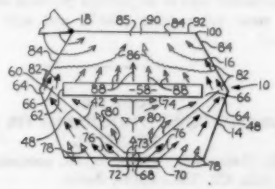
nozzle means carried by said extrusion die and mounted concentrically within said cylindrical bore adjacent said die orifice, and supply means for supplying a liquid under pressure to said nozzle means.

4,454,805

STOVE TOP GRILL

Frank H. Matthews, 18469 Marimba St., Rowland Heights, Calif. 91748

Filed Jun. 2, 1981, Ser. No. 269,700
Int. Cl.³ A47J *37/06*
U.S. Cl. 99—400 **11 Claims**



1. A device for applying heat to food, said heat supplied by a stove top burner, said stove top burner having a relatively cool air passage through the center thereof, said device including:

a horizontal grill adapted to have food rested thereon;

a body having an open bottom portion adapted to rest on the stove top around at least one of the stove top burners, a top portion adapted to support said grill a predetermined distance above the stove top, and a central portion;

heat deflector means mounted spaced from said body within said central portion of said body, said heat deflector means including:

at least one truncated, inverted pyramidal heat deflector defining an open top and open bottom, said defined open bottom being positioned within said body so as to be located centrally above the at least one stove top burner; and

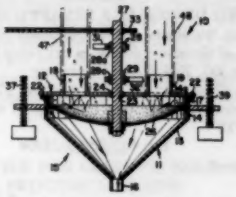
a drip pan mounted between said heat deflector means and said grill, said heat deflector means and said drop pan being sized and positioned to block direct line of sight communication between any burner about which said open body portion is resting and said horizontal grill while allowing convective heating paths between said open bottom portion and said horizontal grill.

4,454,806

ABRADING MACHINE

Timothy Schultz, P.O. Box 466, Madison, S. Dak. 57042

Filed Oct. 12, 1982, Ser. No. 433,793
Int. Cl.³ B02B *3/00, 7/02*
U.S. Cl. 99—609 **11 Claims**



1. A seed dehulling device comprising:

body means defining a cavity, said body means including lower wall means for collecting dehulled seed, said lower wall means including an outlet, said body means further including an upper wall means overlying said lower wall means, said upper wall means including seed inlet means;

means for supporting said body means;

means for feeding seed to said seed inlet means;

a rotatably driven disc disposed in said cavity, said disc having an upwardly facing abrading surface, said surface being spaced downwardly from said upper wall means;

means for rotatably driving said disc; and

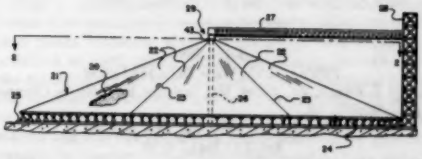
means for adjusting the spacing between said upper wall means and the abrading surface of said disc, said adjusting means comprising means for elevating and lowering said body means, whereby said spacing is sufficient to provide repeated rebounding of seed kernels between said disc and said upper wall means, and whereby said adjusting means provides control of the amount of working of said seed kernels.

4,454,807

STORAGE SYSTEM FOR GRANULAR MATERIALS

Paul P. Wolstenholme, c/o Super C Products Company, 229 S. Main St., P.O. Box 36, West Mansfield, Ohio 43358

Filed Jul. 6, 1982, Ser. No. 395,547
Int. Cl.³ B65G *3/00*; B65D *88/16*; A01F *25/14*
U.S. Cl. 99—646 S **7 Claims**



1. A system for creating and storing a conically shaped pile of flowable granular material extending downwardly from a predetermined height along a natural angle of repose comprising:

a support surface for said pile;

vertical support means extending upwardly from said support surface for a distance at least as great as said predetermined height;

a plurality of flexible, generally triangular cover sections suspended at their apices from a point on said vertical support means at said predetermined height; and

means for introducing said granular material through said point of suspension and under said cover sections;

said cover sections being marginally joined along those of their sides which radiate outwardly from their apices with their remaining sides being free for movement with said granular material during introduction thereof; said cover sections being configured such that they collectively conform to the surface of said pile when fully created.

4,454,808

FEED DEVICE FOR STRAPPING BANDS

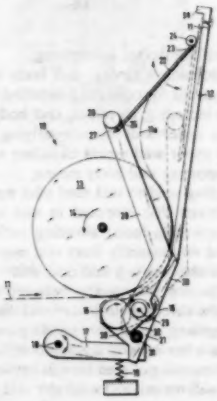
Hubert Wehr, Bornheim, and Rolf-Günther Fritze, Koln, both of Fed. Rep. of Germany, assignors to Cyklop International Emil Hoffmann KG, Fed. Rep. of Germany

Filed May 10, 1982, Ser. No. 376,579

Claims priority, application Fed. Rep. of Germany, May 12, 1981, 3118713

Int. Cl.³ B65B *13/04*

U.S. Cl. 100—4 **7 Claims**



1. A feed device, for strapping bands for use in a strapping machine, which comprises:

a band channel having a stop at one end thereof;

a pressure device;

a drive-operated feed roller which cooperates with said pressure device which pushes the strapping band through said band channel as far as said stop; and

a disengaging lever operatively connected to said pressure device, movable by a band loop in the strapping band formed in said band channel and which moves said pressure device with respect to the feed roller.

4,454,809

PRINT HAMMER MECHANISM

Robert J. Ramig, Jr., Niles, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Apr. 8, 1983, Ser. No. 483,341

Int. Cl.³ B41J *9/30*

U.S. Cl. 101—93.30 **4 Claims**

1. A print hammer mechanism (**10**) for a printer comprising:

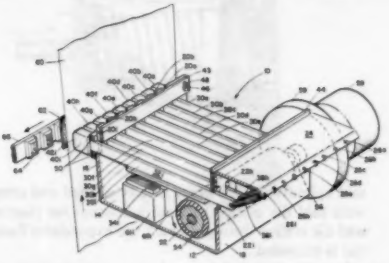
a print hammer (**30***a–i*) including an elongated body member having a print head secured to one end thereof said body member moving axially along a generally linear path from a rest position to a print position, said body member having an elongated driving surface the longitudinal axis of said elongated driving surface being parallel to the longitudinal axis of said body member, said driving surface being positioned for movement along said generally linear path from said rest position to said print position;

first means for biasing said hammer toward said rest position;

a friction drive roller (**52**) with a generally smooth outer surface having a high frictional coefficient with said driving surface and rotatably mounted at a position adjacent to and spaced from said driving surface of said body member, the axis of said drive roller being generally normal to the path of movement of said body member driving surface;

means (**58**) for rotatably driving said roller (**52**);

a selectively energizable electromagnet (**61***a–i*) for selectively biasing said elongated driving surface of said body member toward said electromagnet and against the outer surface of said rotating drive roller (**52**) so that upon engagement with said outer surface of said rotating drive



roller by said drive surface, said hammer body member (**30***a–i*) will be driven from said rest position to said print position along said linear path by frictional engagement of said drive surface and said roller;

said body member of said print hammer (**30***a–i*) includes an elongated steel drive plate defining said driving surface (**34***a–i*) and positioned within the magnetic field generated by said electromagnet (**61***a–i*); and

means for limiting the movement of said hammer (**30***a–i*) towards said electromagnet (**61***a–i*) in response to the energization thereof to prevent physical contact between said steel drive plate (**34***a–i*) and said electromagnet (**61***a–i*).

4,454,810

APPARATUS FOR LITHOGRAPHY OR INTAGLIO PRINTING

Katsutoshi Matsumoto, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Apr. 12, 1982, Ser. No. 367,440

Claims priority, application Japan, Apr. 28, 1981, 56-64717; Jun. 23, 1981, 56-98004

Int. Cl.³ B41F *5/00, 7/00, 31/18;* **B41L** *27/20*

U.S. Cl. 101—141 **3 Claims**

1. An apparatus for lithography or intaglio printing comprising:

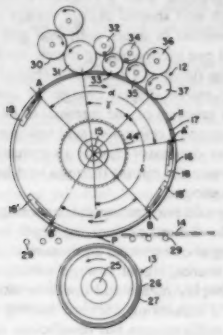
a plate cylinder having at least one printing plate mounted thereon which has a length less than half the circumference of the plate cylinder;

an impression cylinder pressed against the plate at an engagement point when said plate is adjacent said impression cylinder, means rotating said impression cylinder at the same speed as said plate cylinder is rotating when said plate is passing through said engagement point;

a plurality of inking rollers located adjacent to each other and contacting said plate as said plate is carried past said inking rollers by said plate cylinder, the distance between the inking rollers and the engagement point being greater than the peripheral length of the printing plate mounted on said plate cylinder; and

speed control means connected to drive the plate cylinder so as to control the rotational speed thereof so that said plate

cylinder rotates at a higher speed while the printing plate is in contact with at least one of the inking rollers and at



a lower speed while said printing plate is passing through the engagement point.

4,454,811

DEVICE FOR AUTOMATIC ENGAGEMENT OF PRINTING SETS UNDER PRESSURE

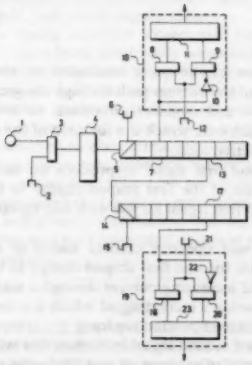
Josef Lanicek, Jirikovice, and Josef Rotter, Brno, both of Czechoslovakia, assignors to ZVS Vyzkumnevyvojovy ustav, koncernova ucelova organizace, Brno, Czechoslovakia

Filed May 4, 1983, Ser. No. 491,365

Claims priority, application Czechoslovakia, May 4, 1982, 3206-82

Int. Cl.³ B41F *5/16*

U.S. Cl. 101—185 **2 Claims**



1. In a printing machine having printing cylinders and provided with a paper reverser having transfer drums, the improvement comprising a mechanism for automatically checking the correct position of the paper upon the handling of the paper by the paper reverser, said mechanism comprising a first, paper feeding scanner, a second scanner for checking the angle of displacement of the printing cylinders and the transfer drums, circuit means for connecting the first and second scanners via a first coincidence gate to the input of a first memory, a first shift register having a serial input and a clock pulse input, the output of said first memory being connected to the serial input of said first shift register, to the clock pulse input of said first shift register there is connected a scanner of pulses which are in synchronism with the rotation of a transfer drum upstream of the paper reverser, a first circuit for commanding the printing of the first side of a sheet of paper with a first printing set, said first circuit being connected to the first used storage location of the first shift register, the second used storage location of the first shift register coinciding with the position of the paper reverser within the system of printing sets of the printing machine and the transfer drums, a second shift register having a serial input and a clock pulse input, the clock pulse input of the shift second register being connected to a second pulse scanner for detecting pulses synchronous with the revolution of a printing machine part downstream of the paper reverser, and a second circuit for commanding the printing of the second side of the sheet of paper with a second printing set, said second circuit being connected to the storage location of the second shift register which coincides with the number of revolutions of such downstream machine part after the feeding of the paper sheet into the paper reverser.

4,454,812

SAFETY DEVICE FOR COUNTER ROLLERS IN A PRINTING MACHINE

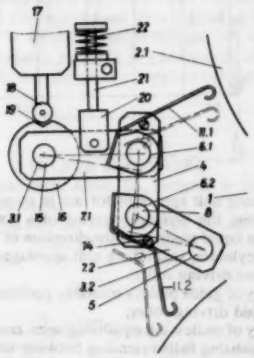
Hans Johne; Lothar Schmidt, both of Radebeul, and Arndt Jentzsch, Coswig, all of German Democratic Rep., assignors to Veb Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Filed Sep. 27, 1982, Ser. No. 424,956

Claims priority, application German Democratic Rep., Nov. 6, 1981, 234663

Int. Cl.³ B41F *33/14*

U.S. Cl. 101—212 **4 Claims**



1. In a printing press, in which counter printing rollers are arranged to form a contact gap therebetween, a safety device mounted in the vicinity of the contact gap to prevent foreign element from entering thereinto and comprising two pivotable guard plates extending along the length of said rollers and connected to each other; a transmission unit including four links arranged within side walls of the printing press; a coupling member connecting a first link and a second link of said unit to each other, a first transmission member interconnected between said first link and a third link of said unit, and a second transmission member inter-connected between said second link and a fourth link of said unit, said fourth link being a shaft extending through the whole width of the printing press and rotatably mounted within the press side walls; a cam segment, said third link carrying said cam segment; and 9 cam segment actuated switch for switching the printing press on and off and actuated by said cam segment; said transmission unit being connected to said cam segment and said guard plates, two links of said being connected to each other by a coupling member and said first link and said second link supporting the respective guard plates, said plates being spring-loaded on said first link and said second link, respectively, said coupling member being provided with two stops each assigned to the respective guard plate whereby if a foreign element comes into contact

with at least one of said guard plates the latter press against the respective stops so that said unit causes pivoting of the guard plates away from said rollers and actuates said switch via said cam segment to switch the printing press off.

4,454,813

INKING UNIT

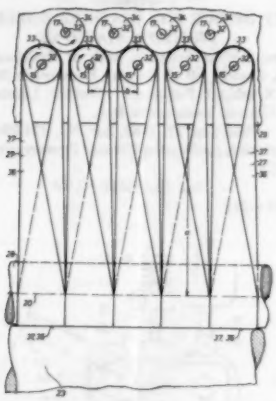
Claus D. Barrois, Marktheidenfeld, and Philipp A. Dieterich, Randersacker, both of Fed. Rep. of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Jun. 22, 1983, Ser. No. 506,954

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1982, 3225378

Int. Cl.³ B41F *31/16*; B41L *27/18*

U.S. Cl. 101—349 **3 Claims**



1. An inking unit apparatus for use in transporting a liquid medium along the surface covering of a rotatable cylinder carrying the liquid medium in the direction of the longitudinal axis of the cylinder, said inking unit apparatus comprising:

at least one driving roller;

a plurality of guide pulleys rotatably positioned at a distance from said driving roller;

a plurality of endless ink equalizing belts, each of said endless ink equalizing belts extending between said driving roller and one of said guide pulleys, each of said endless ink equalizing belts having an outer surface layer capable of accepting the liquid medium and being in contact with the cylinder carrying the liquid medium; and

mobile transfer means contacting said outer surface layers of adjacent ones of said endless ink equalizing belts to transfer the liquid medium between said endless ink equalizing belts.

4,454,814

SELECT-FIRE SYSTEMS AND METHODS FOR PERFORATING GUNS

Walter B. Henry, Fort Worth; John F. McNeely, Cleburne, and Harrold D. Owen, Fort Worth, all of Tex., assignors to Pengo Industries, Inc., Fort Worth, Tex.

Filed Jul. 7, 1982, Ser. No. 396,027

Int. Cl.³ F42D *1/04*; E21B *43/118*

U.S. Cl. 102—200 **2 Claims**

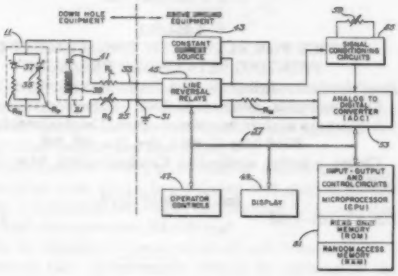
1. An improved method of selectively firing a perforating gun comprising the steps of:

a. providing a perforating gun having disposed therein a plurality of shaped charges arranged in a vertical array and to be fired sequentially beginning with the lowermost charge; with each shaped charge having a detonator device adapted for actuation when energized by an electric firing current of sufficient magnitude; with gun conductor means connected from the upper end of said perforating gun to ground; with a respective resistance associated with each said shaped charge except the lowermost one and connected in series with said gun conductor means; with said gun incorporating means designed to act responsive to the firing of a respective shaped charge to arm the next successive shaped charge by completing a circuit from the junction of one terminal of its respective detonator device and a respective said resistance and through the respective detonator device to ground, and at the same time to open the circuit through said last mentioned resistance to ground;

b. lowering said perforating gun on a single conductor wireline to the desired perforating depth in a well bore;

c. providing above ground equipment comprising a constant current source, signal storage means, signal comparison means, display means and operator control means;

d. passing a measuring current, having a magnitude of at least 20 milliamperes but insufficient to actuate a shaped charge detonator device, through each conductive loop which includes said single conductor wireline, the down



hole portion of the outer conductor or sheath of said wireline and the current path through the gun in either of the positive and negative directions, to develop a first signal in each case which is a function of the resistance of said conductive loop;

e. utilizing said first signal to produce on said display an identification of the first shaped charge to be fired, and storing said first signal for use with said signal comparison means;

f. actuating said operator control means to energize the firing circuit for said first shaped charge to be fired;

g. passing said measuring current through a said conductive loop to develop a second signal which is a function of the resistance of said conductive loop;

h. utilizing said second signal in conjunction with said comparison means to produce on said display an identification of the second shaped charge to be fired;

i. actuating said operator control means to energize the firing circuit for said second shaped charge to be fired;

j. repeating said measuring, comparison, display and operator control actuation until the desired number of said shaped charges have been fired.

4,454,815

REPROGRAMMABLE ELECTRONIC FUZE

Peter M. Beck, Denville, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 21, 1981, Ser. No. 303,814

Int. Cl.³ F42C *17/00*

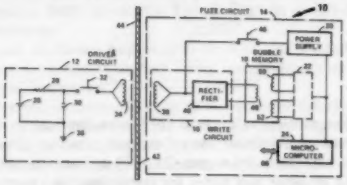
U.S. Cl. 102—206 **4 Claims**

1. A reprogrammable electronic fuze system, comprising:

a munition, said munition having a wall structure as a component thereof:

an internal fuze circuit means, said internal fuze circuit means being located and positioned within said munition, a portion of said internal fuze circuit means being positioned adjacent to said wall structure;

an external driver circuit means, said external driver circuit means being located on the exterior of said munition in the proximity of said wall structure at which said portion of said internal fuze circuit means is positioned, said external driver circuit means being capable of sending a high frequency electronic signal into said munition to said internal fuze circuit means, said internal fuze circuit means being capable of receiving said high frequency electronic signal to program said internal fuze circuit means, said internal fuze circuit means being further capable of receiving a subsequent high frequency electronic signal from said external driver circuit means to reprogram said internal fuze circuit means without disassembly of said munition to replace any components thereof, said external driver circuit means being separate from said munition and not affixed thereto, which includes;



a first power supply means, said first power supply means having a first terminal and a second terminal;

a current limiting resistor means, said current limiting resistor means being electrically connected to said first terminal of said first power supply means;

an energy storing capacitor means, said energy storing capacitor means being electrically connected to said second terminal of said first power supply means, said first power supply means and said energy storing capacitor means being further connected to a first ground means;

a first switch means, said first switch means being electrically connected to said current limiting resistor means and to said energy storing capacitor means; and

a primary transmitting coil means, said primary transmitting coil means being electrically connected to said first switch means, said primary transmitting coil means being capable of sending said high frequency signals to said internal fuze circuit means.

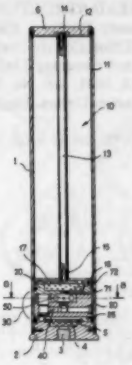
4,454,816

CARTRIDGE HAVING A PYROTECHNICAL ACTUATION OF A PAYLOAD WITH A SAFETY DEVICE

Alain A. A. Billard, Muret; Hubert C. G. Calmettes, Toulouse, and Roland C. Encoyand, Muret, all of France, assignors to Societe E. Lacroix-Tous Artifices, Muret, France

Filed Sep. 8, 1981, Ser. No. 300,264
Claims priority, application France, Sep. 12, 1980, 80 19720
Int. Cl.³ F42B 4/26
U.S. Cl. 102—430 **9 Claims**

1. A cartridge having pyrotechnical actuation of a payload, comprising a tube attached to a generally cylindrical casing base, and a projectile equipped with a delayed action pyrotechnical chain and an actuating charge mounted in said base, and an ejection charge in said base intermediate said base and said projectile, wherein the pyrotechnical chain is activated by the ejection charge so as to ignite the actuating charge after the projectile has left the tube, and wherein the pyrotechnical chain is broken at a valve member that is slidable transversely relative to the axis of said cartridge, which member is movable into an operative position for ignition relay until after the projectile has left the tube, and wherein the said valve member is held in the chain breaking postiion by a stop member which is attached to an inertia block that is axially immobile until a predetermined inertial force intensity has been applied, said inertia block then being axially movable to displace the stop under the effect of the acceleration of said projectile due to the firing of the projectile, and wherein said pyrotechnical chain



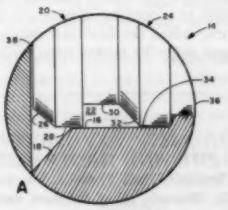
comprises another, second chain breaker comprising a sealing-block which is disposed to break said chain and which is axially immobile below a predetermined force applied by firing of said ejection charge to generate combustion gas, and wherein said sealing block is axially movable to a position in which it does not break the chain under pressure applied by said combustion gas.

4,454,817

BELTED SHOTSHELL

Herman N. Bockstruck, Alton, Ill., assignor to Olin Corporation, Stamford, Conn.

Filed Jan. 13, 1982, Ser. No. 339,238
Int. Cl.³ F42B 7/00
U.S. Cl. 102—469 **10 Claims**



1. A shotshell comprising:

a tubular body portion having a mouth end and a base end and adapted to contain a shot column within a chamber of a shotgun;

a head portion attached to said base end which includes

a base rim at the base of said shotshell,

an annular extraction recess immediately adjacent and toward the mouth of said shotshell from said base rim

a belt rim of a maximum outside diameter less than the minimum outside diameter of a standard commercial shotshell base rim of the same gauge size as said shotshell and greater than the inside diameter of said recess and greater than the maximum internal diameter of a standard commercial shotgun chamber bore and disposed immediately toward said mouth end from said

recess and extending to a greater distance from said base toward said mouth than the axial length of a conventional chamber breeching bevel of a commercial shotgun chamber of the same gauge size.

4,454,818

ADVANCING OF APPARATUS FOR REFURBISHING OVERHEAD STRUCTURES

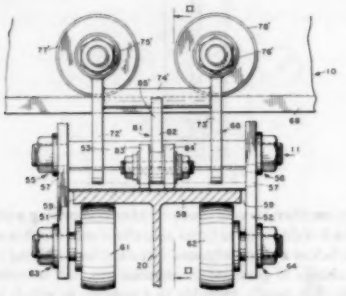
Barry C. Eccleston, County Durham; Alexander S. Sinclair, Cheadle, and Michael Elliot, County Durham, all of England, assignors to A. Monk and Company Limited, England

Filed Oct. 16, 1981, Ser. No. 311,817

Claims priority, application United Kingdom, Oct. 18, 1980, 8033682

Int. Cl.³ B61F *13/00*; B66C *9/02*; E01B *26/00*

U.S. Cl. 104—98 **10 Claims**



1. A coupling trolley for a beam that is longitudinally translatable relative to a flanged member located above and extending transversely of the beam, the trolley serving supportingly to engage said beam and to be movable with and relative to said beam, the trolley further having attachment means supportingly to engage said flanged member, the attachment means including first and second parts to engage said flanged member from opposite sides that are nearest and furthest, respectively, in the direction of movement of said beam, the second part being movable by shifting said beam to cause the second part to move from a retracted position wherein it clears said flanged member to a position of securing-engagement of said flanged member when the first part encounters the said flanged member and stops the trolley from further movement with said beam.

4,454,819

SYSTEM FOR AUTOMATICALLY GUIDING A VEHICLE PROVIDED WITH TIRED WHEELS

Jacques Cuylits, Brussels; Paul Lenssen, Varsenare, and Philippe P. Chatelle, Brussels, all of Belgium, assignors to S.A. Constructions Ferroviaires et Metalliques, Brussels, Belgium

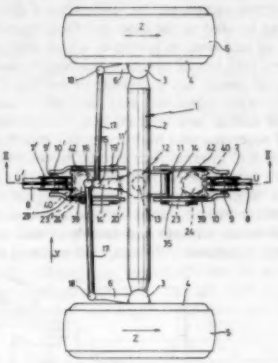
Filed Mar. 30, 1982, Ser. No. 363,735

Claims priority, application Luxembourg, Apr. 2, 1981, 83276

Int. Cl.³ B61F *9/00*

U.S. Cl. 104—245 **17 Claims**

1. A system for automatically guiding a vehicle, provided with at least one steering axle (2) supporting wheels (4) having pneumatic tires (5), comprising: a first roller (7) for following a rail (8) extending in the direction of movement of the vehicle, a first support arm (10) mounting said first roller and extending in the direction of movement of the vehicle with respect to the steering axle, a turret (12) mounted on a substantially vertical pivot (13) supported by said steering axle, first horizontal axle means (11) mounting said first support arm to said turret for vertical oscillation, at least one coupling bar (17) hinged at one end to a steering lever (6) of one of the wheels and at the other end to an extension (14') of said turret, a second roller (7') for following the rail, a second support arm (10') mounting said second roller and extending in a direction opposite the direction of movement of the vehicle with respect to the steering axle, a crossbar (19'), second horizontal axle means (11') mounting said second support arm to said crossbar for vertical



oscillation, vertical axle means (20') mounting said crossbar to said turret whereby said second support arm may pivot horizontally, and limit stop means (21', 22') operatively associated with said crossbar and turret for restricting the extent of said horizontal pivoting.

4,454,820

APPARATUS FOR DAMPING OSCILLATIONS OF MAGNETIC ELEVATED TRACKS AND VEHICLES FLOATINGLY SUSPENDED THEREON

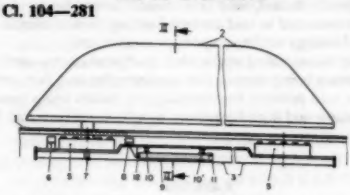
Hans-Georg Raschbichler, Ottobrunn, Fed. Rep. of Germany, assignor to Thyssen Industrie Aktiengesellschaft, Essen, Fed. Rep. of Germany

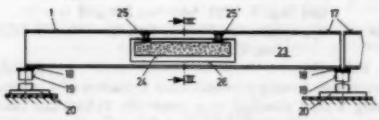
Filed Aug. 26, 1981, Ser. No. 296,489

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1981, 8108814[U]

Int. Cl.³ B61B *13/08*

U.S. Cl. 104—281 **6 Claims**





1. In a transportation system including (a) a vehicle; (b) a longitudinally extending beam on which is located a longitudinally extending armature forming a track for supporting the vehicle, and (c) magnetic means for supporting the vehicle in a magnetic field in spaced relation to the track; a support on the vehicle which extends parallel to the longitudinally extending beam of the track, the longitudinally extending beam having a pair of spaced, vertically extending web plates supporting a

horizontally extending chord plate upon which the horizontally oriented and longitudinally extending armature is located; the improvement characterized by apparatus for damping mechanical oscillations, which apparatus comprises in combination:

a first oscillation suppression device, the device being a hollow longitudinally extending body having two end faces, two longitudinally extending side portions, a top portion and a bottom portion, the hollow body being filled with a damping medium;

spring means connected between the hollow body and longitudinally extending support for suspending the body on the vehicle;

a stop on the longitudinally extending support adjacent to one of the end faces of the hollow body;

a buffer between said end face and the stop;

means engaging the side portions of the hollow body to minimize lateral movement thereof while permitting longitudinal movement thereof with respect to said stop;

means for selectively closing the other end face to leave the hollow body accessable for adjustments to the damping medium;

second oscillation suppression devices, the second oscillation suppression devices being longitudinally extending, solid bodies; and

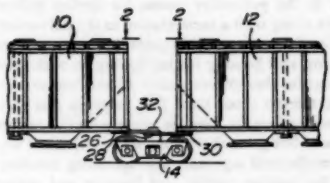
spring means connecting the solid bodies to the chord plate at a location between the vertically extending web plates for free swinging movement with respect thereto; whereby mechanical oscillations which might occur in the system are damped.

4,454,821

RADIAL ARTICULATED TRUCK

William W. Dickhart, III, Fort Washington, Pa., assignor to The Budd Company, Troy, Mich.

Filed Nov. 2, 1981, Ser. No. 317,305
Int. Cl.³ B61D *3/10*; B61F *3/12, 5/44*
U.S. Cl. 105—4 R **1 Claim**



1. In combination with a truck for connecting and supporting a pair of linked rail cars and having a bolster connected to a pair of side frames with wheel axle assemblies on said side frames,

a forced steering system for maintaining said truck substantially radial with respect to a curved track during operation comprising:

(a) connecting means secured to said bolster;

(b) means for pivotally connecting the ends of said rail cars to said connecting means;

(c) a mechanical linkage including a plurality of bars connected between one of said rail cars and said bolster to force said truck to maintain a radial position with said curved track;

(d) said plurality of bars comprise two pairs of bars connected between the opposite ends of said bolster to laterally spaced connections of said one of said rail cars, and a connecting bar connecting said two pairs of bars; and

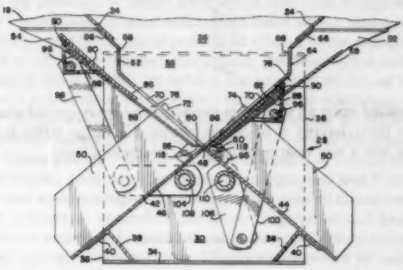
(e) said two pairs of bars forcing the opposite ends of said bolster to be moved in opposite directions relative to the end of said one car when said truck is passing over a curved track.

4,454,822

GATE ASSEMBLY UNIT FOR BALLAST DISTRIBUTION FROM RAILROAD CAR

Robert T. Fischer, Homewood, Ill., assignor to Miner Enterprises, Inc., Geneva, Ill.

Filed Sep. 27, 1982, Ser. No. 423,949
Int. Cl.³ B61D *7/00*
U.S. Cl. 105—250 **4 Claims**



1. A gate assembly unit particularly adapted for installation to a bottom outlet of a hopper-type railroad car to provide regulation of a material discharge through said car outlet, said unit comprising,

a unit body defined by spaced inner and outer sidewalls joined by end walls with said body fitting about said outlet,

an inner and outer opening formed in said inner and outer sidewalls respectively with sides of said opening formed by sloped segments of said sidewalls,

a divider panel carried by said body between said end walls with ends of said sidewall segments connecting with said divider panel adjacent to a leading edge of said divider panel,

inner door guides and outer door guides formed by said sidewall end segments and flanged edges of said end walls, said flanged edges and said end segments offset to converge toward said divider panel leading edge,

an inner and outer plate-like door having end portions disposed in said inner and outer door guides respectively with said doors selectively covering said inner and outer openings, an upper portion of each said door suspended in said respective guides by slide means, and a lower lip portion of each said door offset to align with said slide means, and

inner and outer door operative means carried by said unit body and connected to said end portions of said inner and outer door respectively, said means raising and lifting said doors to reduce frictional forces on said doors and allow a smooth upward movemen of said doors in said door guides to uncover said respective unit openings.

4,454,823

BULK FREIGHT RAIL CAR WITH METALLIZED INTERIOR SURFACES

David A. Stoller, Sr., Dunwoody; William B. Culler, Norcross, and Paul E. Wiesner, Cumming, all of Ga., assignors to Portec, Inc., Oak Brook, Ill.

Filed Oct. 8, 1981, Ser. No. 309,705
Int. Cl.³ B61D *17/18*
U.S. Cl. 105—423 **3 Claims**

1. A metallized freight railcar for carrying coal and the like lading, said railcar comprising a hopper car including a plurality of steel sheets each having an interior surface and all defining the limits of the hopper car interior, said steel of said sheets normally subject to corrosive and abrasive attack by said lading, a protective layer of aluminum overlying all said sheet interior surfaces, said sheet interior surfaces roughened to enhance the adherence of said aluminum layer thereto, said

protective layer comprising substantially pure aluminum, said aluminum protective layer comprising a spray coated layer

deposited upon all said sheet surfaces, said spray coated aluminum layer having a thickness within the range 0.006–0.032 inch, and a seal coat overlying said aluminum layer.

4,454,824

BEACH LOCKER

Gary J. Wood, 13929 Hawick Dr., El Cajon, Calif. 92021

Continuation-in-part of Ser. No. 180,610, Aug. 25, 1980. This application Feb. 16, 1982, Ser. No. 349,332

Int. Cl.³ E05G *1/00*

U.S. Cl. 109—52 **8 Claims**

1. A completely self-contained and portable beach locker defining a lockable compartment capable of locked engagement in beach sand to secure valuables without requiring external mountings or equipment, comprising:

(a) a shaft having an upper and a lower end, and having an auger on said lower end for spiralling into or out of the sand;

(b) means for rotating the upper end of said shaft to permit a user to apply torque to said shaft;

(c) a lockable container mounted on said upper end of said shaft;

(d) a selective disenabler for said means for rotating such that said means for rotating is rendered ineffective when said disenabler is operative, such that in operation, said shaft can be rotated to engage said auger deep into said sand prior to engaging said disenabler and said disenabler can then be engaged to prevent counter-rotation and removal of said shaft, and said disenabler being substantially enclosed within said containers such that when said disenabler is operative and said container locked, said disenabler cannot be disengaged until said container is unlocked.

4,454,825

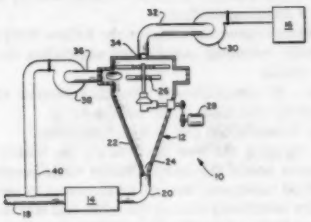
MILL RECIRCULATION SYSTEM

Richard L. Musto, Homewood, Ill., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 18, 1982, Ser. No. 442,557

Int. Cl.³ F23K *1/00*; F23D *1/00*

U.S. Cl. 110—106 **4 Claims**



1. In a direct fired system operative for purposes of effecting the pulverization and subsequent firing of solid fuels, said direct fired system including pulverizer means for pulverizing solid fuel material, classifier means for rejecting pulverized solid fuel particles that exceed preset specifications for fineness and for returning the rejected oversize particles to the pulverizer means for further pulverization, burner means for firing therewithin properly sized solid fuel particles, and means establishing a fluid flow path for a stream of hot gases from the pulverizer means to the classifier means and from the classifier means to the burner means, the improvement comprising classifier means consisting of a mechanical separator, said mechanical separator including a housing having a bottom inlet formed therein connected to the pulverizer means for receiving therefrom the pulverized solid fuel particles, sail housing also having a tangential outlet formed therein connected to the pulverizer means for recirculating the oversize solid fuel particles back to the pulverizer means for further pulverization therewithin along with a recirculation to the pulverizer means of a portion of the stream of hot gases that enters said mechanical separator, said housing further having an outlet formed in the top portion thereof connected to the burner means for conveying thereto those solid fuel particles that satisfy the preset specifications for fineness along with the remainder of the stream of hot gases that enters said mechanical separator, and said mechanical separator also including rotating means mounted for rotation within said housing and operative to effect the separation of the solid fuel particles received in said mechanical separator into those solid fuel particles that satisfy the preset specifications for fineness and those solid fuel particles that exceed the preset specifications for fineness.

4,454,826

VERTICAL FLOW INCINERATOR HAVING REGENERATIVE HEAT EXCHANGE

Edward H. Benedick, Lancaster, Pa., assignor to Regenerative Environmental Equipment Co., Inc., Morris Plains, N.J.

Filed Jun. 23, 1982, Ser. No. 391,110

Int. Cl.³ F23B *5/00*; F23C *9/00*; F23G *7/06*

U.S. Cl. 110—211 **11 Claims**

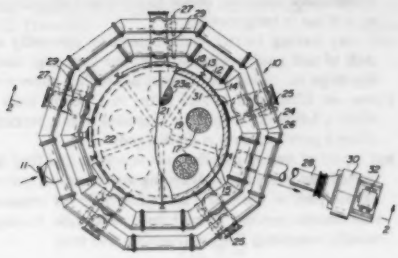
1. Thermal recovery incineration apparatus comprising:

(a) a plurality of adjacent, substantially parallel and vertical gas-processing sections each of which includes:

(1) a positionally fixed heat exchange means having a plurality of normally immobile heat exchange elements therein, a predetermined cross-sectional area, and

(2) a cover for said sections with aperture means formed

therein whose area is substantially smaller than said predetermined area, and



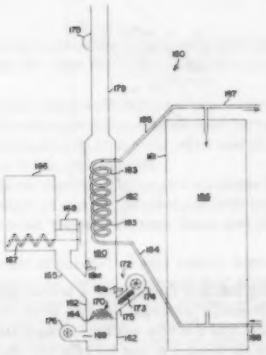
(b) a high temperature combustion chamber disposed above said sections and in gas-flow communication therewith through said aperture means.

4,454,827

IGNITION AND CONTROL SYSTEM FOR FRAGMENTED WOOD-TYPE FUEL FURNACES

Norman Smith, and John G. Riley, both of Orono, Me., assignors to The Board of Trustees of the University of Maine, Bangor, Me.

Filed Mar. 11, 1982, Ser. No. 356,973
Int. Cl.³ F23G 7/00
U.S. Cl. 110—234 **22 Claims**



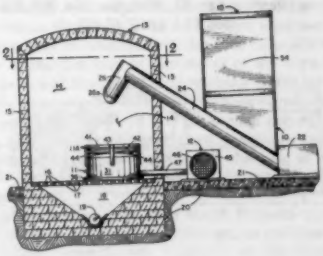
1. A furnace system comprising: wood-type fuel combustion chamber means comprising an enclosure of refractory material forming a primary combustion section and an afterburner section affording flame passageway means within said enclosure, a combustion chamber surface mounted in the primary combustion section for receiving fragments of wood-type fuel and for supporting said fuel during combustion, said enclosure formed with an opening above the combustion surface for gravity delivery of fragmented wood-type fuels onto said surface, said enclosure formed with combustion air inlet means in said primary combustion section and draft outlet means in the afterburner section, electric igniter means, said electric igniter means comprising heating element means operatively formed for achieving flash point temperatures of the fuel to be ignited, shroud means enclosing said heating element means and operatively communicating at one end with the combustion chamber means above the combustion surface and adjacent wood-type fuel supported on said surface, said shroud means open at said end to expose wood-type fuel supported on the surface to radiant heat from the heating from the heating element means for ignition by radiant heat without the heating element means contacting the wood-type fuels, said shroud means mounted at an angle above the horizontal and directed downwardly toward the combustion surface, blower means coupled to the other end of said shroud means for delivering air over the heating element means thereby cooling the heating element means and delivering heated combustion air to the wood-type fuel supported on said surface, flame sensor means positioned relative to the combustion chamber means for sensing the presence of flames from wood-type fuels supported in the combustion chamber means, said flame sensor means comprising a first flame sensor positioned relative to the wood-type fuel combustion chamber means over the combustion surface looking downwardly for sensing the presence of flames from above said surface, and a second flame sensor positioned relative to the wood-type fuel combustion chamber means at the side and looking across the flame path for sensing the presence of flames passing from the primary combustion section to the afterburner section of the combustion chamber, said first and second sensors coupled in parallel in the control circuit means for concurrent control of the electric igniter means heating element means, and control circuit means operatively coupling said heating element means and flame sensor means for switching off said heating element means upon sensing of flames from the wood-type fuel, said control circuit means comprising timing means for turning off the heating element means after a specified period of time if flames are not sensed by the flame sensor means.

4,454,828

SYSTEM FOR BURNING BIO-MASS PELLETS

Allen M. Zempel, P.O. Box 12A, St. Ignatius, Mont. 59865

Filed Jan. 24, 1983, Ser. No. 460,190
Int. Cl.³ F23G 5/04
U.S. Cl. 110—248 **5 Claims**



1. Apparatus for burning bio-mass pellets in the fire chamber of comprising, in combination:

A stoker, with fuel storage hopper and fuel moving mechanism spacedly adjacent the furnace, having an upwardly inclined fuel feed tube extending from the fuel storage hopper into the upper part of the furnace fire chamber to there support a downwardly angled nozzle having a smaller lowermost orifice and depending to a position at a spaced distance vertically above a combustion head, and

the afore said combustion head carried in the lower portion of the fuel chamber peripherally defining an air chamber and having

an upwardly convext top with a plurality of a spacedly arrayed holes defined therein and

a retaining ring structure extending upwardly from the periphery of the top to aid in maintaining particulate fuel on the top;

means of supplying pressurized air to the air chamber defined within the combustion head; and

independent control means for activating the stoker system responsive to predetermined temperature and the pressur-

ized air system responsive to predetermined time intervals.

5. In a furnace for burning bio-mass pellets, having a fire chamber and a stoker feeding system, the combination comprising:

a rigid combustion head carried in the firing chamber and having peripheral walls defining a closed air chamber with a planar bottom and an upwardly convex top;

a plurality of spaced arrayed holes defined in the top in an annular zone inwardly adjacent the periphery of the top;

a plurality of spaced, angularly arrayed vortex pipes structurally carried by the top, communicating with the air chamber therebeneath and extending a spaced distance thereabove to aid in creating a vortive air flow at a spaced distance above the top; and

a retaining ring structure, having means to allow air flow therethrough, extending upwardly from the periphery of the top to aid in maintaining fuel thereon and preventing it from passing off the periphery thereof; and

a fuel feed pipe communicating to the upper part of the fire chamber above the combustion head, said fuel feed pipe having a pipe-like nozzle depending from structural communication at an angle with the fuel feed pipe to receive fuel pellets from the fuel feed pipe and pass them downwardly through the nozzle by reason of gravity forces acting thereon, said nozzle having,

a lowermost end defining an orifice substantially smaller in area than a cross-section of the pipe-like nozzle, said orifice positioned to allow exit of particulate fuel therefrom and onto the combustion head by gravity action.

4,454,829

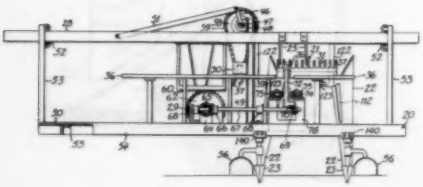
AUTOMATIC PLANT SETTING APPARATUS

Gil A. Sena, 1491 Black Rd., Santa Maria, Calif. 93454

Continuation of Ser. No. 261,368, May 7, 1981, abandoned. This application Apr. 14, 1982, Ser. No. 368,270

Int. Cl.³ A01C *11/00*

U.S. Cl. 111—2 **7 Claims**



1. Mobile apparatus, for advancing, singulating and planting seedlings growing in strips, comrising:

a frame having means for travel along a path on an earth surface to be planted;

means for opening the earth at predetermined locations along the path for implanting seedlings;

a plurality of plant container strips each having a plurality of upwardly and laterally opening pockets each adapted to contain a seedling plant;

said strips each having a bottom wall provided with a plurality of abutments projecting downwardly therefrom and spaced longitudinally of said strip the same as the spacing of walls defining said pockets;

a tray having parallel guide walls between which said strips are guided for sequential advancing movements parallel to said path of travel in order to sequentially position successive pockets at a predetermined discharge point of said frame;

means successively engageable with said abutments for effecting said sequential movements in response to said travel in order to successively position said pockets at a oredetermined discharge point in said frame;

a powered bar means carried by said frame for reciprocating movements in response to said travel of said frame;

a downwardly projecting finger carried by said bar for sequentially sweeping plants laterally out of said pockets as said bar is reciprocated;

said tray having barrier walls extending upwardly at the ends of said guide walls and effective to engage succeeding strips to retain them against advancing movements;

means for lifting one of said strips to a height such as to allow a following strip to be extended over a barrier wall when a previous strip is discharged;

and a pair of spaced parallel rails in which said tray is supported and guided for advancing movements transversely of said path to position a suceeding strip for consecutive movements parallel to said path, said rails having upwardly extending flanges retaining said tray.

4,454,830

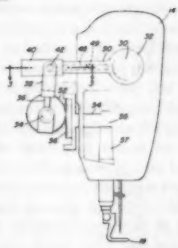
SEWING MACHINE PRESSER FOOT HAVING CHANGEABLE ZONE OF RECIPROCATION

George Bennett, Milford, N.H., assignor to International Shoe Machine Corporation, Nashua, N.H.

Filed Oct. 28, 1981, Ser. No. 316,007

Int. Cl.³ D05B *29/02*

U.S. Cl. 112—239 **3 Claims**



1. A sewing machine comprising: a sewing machine head; a needle reciprocably mounted in the head for penetrating movement into and out of a workpiece supported on a throat plate beneath the needle; means for effecting the needle reciprocation; means for shifting the workpiece while the needle is disengaged from the workpiece to thereby enable successive penetrations of the needle into the workpiece to form stitches in the workpiece; a presser foot reciprocably mounted in the head adjacent to the needle; means for reciprocating the presser foot in synchronism with reciprocation of the needle so that the presser foot presses against the workpiece and prevents shifting of the workpiece during the penetrations of the workpiece by the needle; characterized in that the machine comprises air-actuated changing means effective to change the zone of reciprocation of the presser foot during the reciprocations of the needle and the presser foot to accommodate the presser foot to changes in the thickness of the workpiece, the means for reciprocating the presser foot and the changing means comprising a pin mounted for oscillation, a connection between the presser foot and the pin effective to reciprocate the presser foot pursuant to oscillation of the pin, means for effecting oscillation of the pin to thereby effect reciprocation of the presser foot, and means for changing the zone of oscillation of the pin to thereby effect said change in the zone of reciprocation of the presser foot.

4,454,831

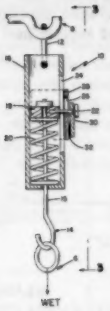
WATERING INDICATOR FOR HANGING PLANTS

Joseph S. Gallo, 58 Peach St., Walpole, Mass. 02081

Filed Jul. 14, 1983, Ser. No. 513,736

Int. Cl.³ G01N 5/02; G01L 11/24; A01G 9/02; G01G 23/20

U.S. Cl. 116—200 11 Claims



1. Apparatus for supporting a hanging potted plant and for indicating when the plant needs watering, said aparatus comprising:

first and second support elements for connecting said plant to an overhead support, one said element being connected to said overhead support and the other said element being connected to said potted plant,

spring means connecting said support elements for supporting the weight of said potted plant and resisting separation of said second support element from said first support element,

a mask element connected to said second support element and adapted to be moved along said first support element in response to movement of said second support element relative to said first support element,

an indicator element with an indication indicia, and

mounting means for mounting said indicator element on said first support element and for adapting said indicator element so that it moves in response to relative motion between said first and second support elements, said mask element cooperating with said indicator element in such a manner as to cover said indication indicia when said potted plant is watered and to expose said indicia as said potted plant dries out,

said mounting means comprising

means for mounting said indicator element on said first support element so that said indicator element remains in a fixed position on said first support element absent a moving force,

slippage means on said indicator element operable whenever the direction of relative motion between said first and second support elements is reversed, for allowing said indicator element to remain fixed in position for a predetermined distance of movement of said mask element sufficient either to cover or expose said indicia before said moving force is applied to said indicator element.

4,454,832

APPARATUS FOR ELECTROSTATICALLY DEPOSITING POWDER IN SEVERAL DIFFERENT LAYERS ON OBJECTS

Alain Gernez, Orleans, France, assignor to Societe Anonyme dite: Compagnie Europeenne pour l'Equipement Menager "CEPEM", Paris, France

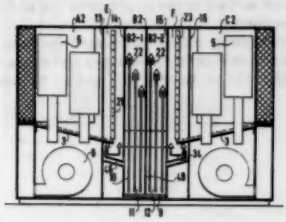
Division of Ser. No. 267,889, May 28, 1981, Pat. No. 4,376,136.

This application Sep. 30, 1982, Ser. No. 430,780

Claims priority, application France, Jun. 13, 1980, 80 13161

Int. Cl.³ B05B 5/02

U.S. Cl. 118—634 9 Claims



1. Apparatus for electrostatically depositing powder on objects, the apparatus including means for conveying objects along a path and at least a first booth for depositing a first powder on the objects and a second booth for depositing a second powder on the objects, the first and second booths being disposed in sequence along said path in the direction of movement of the objects, each booth including a powder depositing module and at least one air filtering module, wherein the improvement comprises:

said first powder depositing booth includes a first chamber, a second chamber located contiguously upstream of the first chamber with respect to the direction of movement of the objects along said path, and a third chamber located contiguously downstream of the first chamber with respect to the direction of movement of the objects along said path, said first chamber comprising means for dispersing the first powder such that portions of said dispersed first powder are diffused into the second and third chambers, and said second and third chambers comprising ionizing means for electrostatically charging at least part of the portions of the first powder diffused from the first chamber;

said second powder depositing booth includes an electrostatic powder depositing chamber and an additional chamber located contiguously upstream of the electrostatic powder depositing chamber with respect to movement of the objects along said path, said electrostatic powder depositing chamber comprising means for dispersing the second powder such that a portion of the dispersed second powder is diffused into said additional chamber and means for electrostatically charging the dispersed second powder, and said additional chamber comprising ionizing means for electrostatically recharging at least part of the portion of the second powder diffused from said electrostatic powder depositing chamber.

4,454,833

LIQUID DEVELOPER APPARATUS

John L. McChesney, Cupertino, and Ballard French, Palo Alto, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 25, 1983, Ser. No. 517,158

Int. Cl.³ G03G 15/06, 15/10

U.S. Cl. 118—651 9 Claims

1. Liquid developer apparatus for developing an electrographic latent image formed on an image bearing surface of a recording medium with a liquid developer comprising a liquid

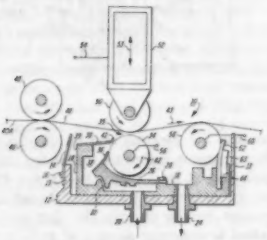
carrier containing toning particles attractable to areas of said surface containing an image-wise charge of a first polarity comprising said latent image, said apparatus comprising

a conductive applicator roll supported for rotational movement adjacent to the path of said recording medium forming a development gap therebetween, said applicator roll rotated in the direction of movement of said recording medium,

a backrest electrode positioned on the opposite side of said recording medium to said applicator roll and across which said recording medium is drawn,

a doctor blade supported against the surface of said applicator roll and positioned on the forward most position of said roll surface in the direction of the advancing recording medium,

flow controlling means positioned between said doctor blade and said development gap and supported in spaced relation relative to said roll surface to form a metering gap,



means to continually supply liquid developer to the surface of said applicator roll in a region between said doctor blade and said flow controlling means,

means to rotate said applicator roll at high rotational velocity sufficient to produce a thin film of liquid developer on said roll surface and metered by said flow controlling means for forming a meniscus in said development gap relative to said moving recording medium,

means to apply a voltage of said first polarity to said applicator roll,

means to apply a voltage of a second polarity to said bakup electrode,

a drying roll positioned down stream relative to the movement of said recording medium and supported for rotational movement against the surface of said recording medium, said dryer rotated in a direction opposite to the direction of movement of said recording medium to remove excess toning liquid from the surface thereof.

4,454,834

INSTALLATION FOR THE COATING OF INDIVIDUAL WAFER SHEETS OR THE LIKE WITH A SPREADING MASS

Franz Hass, Sr., Gerstlgasse 25, A-1210 Wien; Franz Hass, Jr., Kreutgasse, A-2100 Leobendorf, and Johann Hass, Seitweg 4, A-3400 Klosterneuburg, all of Austria

Filed May 19, 1982, Ser. No. 379,866

Claims priority, application Austria, May 20, 1981, 2266/81

Int. Cl.³ B05C *5/00*

U.S. Cl. 118—676 **62 Claims**

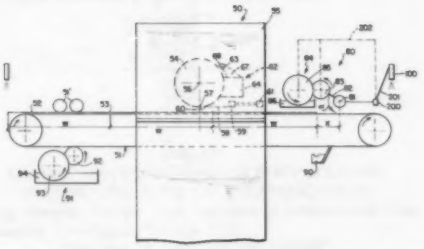
1. An installation for the coating of baked products with a viscous edible spreading mass applied at a certain temperature of application, which viscous material is adhesive at the temperature of application, the coating installation comprising:

a transport installation for moving the baked products along a transport path in a transport direction, the transport installation having an upwardly facing side on which the baked products are carried;

a revolvable generally cylindrical coating roll located above the transport installation, the coating roll having a bottommost point constituting a bottom crest line and an uppermost point constituting an apex, the coating roll also having a surface, the coating roll revolving in a certain direction of rotation;

a coating roll blade cooperating with the coating roll in the vicinity of said bottom crest line;

an application reservoir cooperating with the coating roll and being located after the coating roll blade when considered with respect to the direction of rotation of the coating roll and being located entirely between said bottom crest line and said apex, the reservoir being fillable with spreading mass, part of the application reservoir facing in an upward direction away from the transport installation, and another part of the application reservoir



facing in a downward direction toward the transport installation;

a coating roll squeegee cooperating with said coating roll and with said application reservoir, said coating roll squeegee being disposed after said application reservoir, also when considered with respect to the direction of rotation of the coating roll;

whereby the application reservoir applies the spreading mass to the coating roll, the coating roll squeegee controls the thickness of the spreading mass on the coating roll and the coating roll blade removes the spreading mass from the coating roll in the form of a layer, which layer of spreading mass is then deposited on the baked products transported by the transport installation.

4,454,835

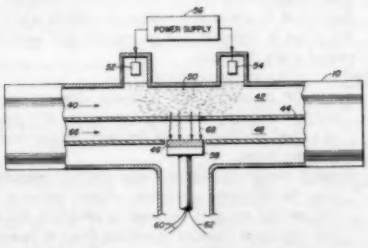
INTERNAL PHOTOLYSIS REACTOR

Peter J. Walsh, Sterling, N.Y., and Nicholas Bottka, Springfield, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 13, 1982, Ser. No. 417,272

Int. Cl.³ C23C *13/08*

U.S. Cl. 118—712 **5 Claims**



1. An apparatus for growing epitaxial layers by photolysis comprising:

a reactor chamber divided into two sections, said sections having a common opening between them;

a sample holder in the first of said two sections for holding a given substrate on which an epitaxial layer is to be grown;

an electrode discharge system in said second section of said reactor chamber for producing predetermined voltage potential;

means for supplying a rare gas to said second section of the reactor chamber, said rare gas emitting light of a desired spectrum range due to electrical discharge of said voltage potential through said rare gas;

means for supplying a molecular compound vapor to said first section of the reactor chamber for coating said substrate on said sample holder with a given molecular compound that undergoes a photolytic change when exposed to said desired spectrum through said opening; and

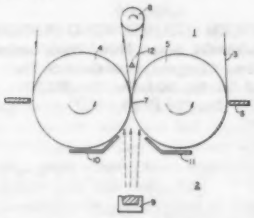
a recycle system connected to said reactor chamber for reusing said rare gas and said molecular compound.

4,454,836

VACUUM EVAPORATING APPARATUS UTILIZING MULTIPLE ROTATABLE CANS

Goro Akashi, and Ryuji Shirahata, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 443,996, Nov. 23, 1982, Pat. No. 4,403,002, which is a continuation of Ser. No. 213,130, Dec. 4, 1980, abandoned. This application May 26, 1983, Ser. No. 498,441
Claims priority, application Japan, Dec. 10, 1979, 54-160102; Dec. 10, 1979, 54-160103
Int. Cl.³ C23C *13/10*
U.S. Cl. 118—718 **4 Claims**



1. Apparatus for vacuum evaporation onto a tape-shaped base comprising:

first and second cans disposed parallel to one another with a narrow gap between said cans to maintain a vacuum degree difference between upper and lower sides of the cans;

means for rotating said cans in the same direction;

a vacuum chamber disposed around said cans, said vacuum chamber being divided into an upper chamber under a first vacuum and a lower chamber under a second vacuum lower in vacuum than said first vacuum, upper portions of said cans being in said upper chamber and lower portions of said cans being in said lower chamber;

a guide roller disposed in said upper chamber between said cans for guiding said tape-shaped base through said gap;

a vacuum evaporation source directed toward said tape-shaped base to deposit a vapor material on said base as it passes through said gap in said lower chamber; and

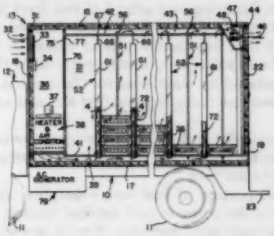
shielding means disposed between said evaporation source and said cans for restricting the evaporation of said vapor material solely to a predetermined area on both sides of said gap on said tape-shaped base.

4,454,837

TRUCK FOR TRANSPORTING BOXES OF POULTRY

Ralph C. Luebke, Memphis, Tenn., assignor to Moore & Sons, Inc., Memphis, Tenn.

Filed Nov. 12, 1982, Ser. No. 440,965
Int. Cl.³ B60P *3/04*
U.S. Cl. 119—12 **17 Claims**



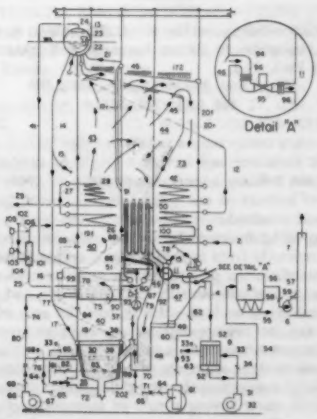
1. A vehicle for transporting concentrated loads requiring air circulation, said vehicle comprising interconnected walls, floor and ceiling forming a load space, said floor forming a common floor cavity adapted to receive circulating air, and a plurality of support ducts which are mountable in substantially vertical positions in said load space, said support ducts being connectable to said floor, a portion of each of said support ducts forming an air circulation duct which is connected to receive air from said common floor cavity, and each of said support ducts having air outlet means formed therein and enabling air to flow from said air circulation duct into said load space.

4,454,838

STEAM GENERATOR HAVING A CIRCULATING FLUIDIZED BED AND A DENSE PACK HEAT EXCHANGER FOR COOLING THE RECIRCULATED SOLID MATERIALS

Charles Strohmeyer, Jr., Gladwyne, Pa., assignor to Electrodyne Research Corporation, Gladwyne, Pa.

Continuation-in-part of Ser. No. 473,651, Mar. 7, 1983. This application Mar. 23, 1983, Ser. No. 477,920
Int. Cl.³ F22B *1/00*
U.S. Cl. 122—4 **3 Claims**



1. An apparatus for high level transfer of heat between

recirculated solids and fluid cooled heat absorption circuits in a steam generator which comprises:

means defining a steam generator with combustion system in which the high level transfer of said heat is carried out;

a feedwater inlet and superheated steam outlet and fluid cooled heat absorption circuits in between;

means for combustion of a solid fuel in a vertical reactor in association with cooled inert solid particles;

first inlet means for air located in the bottom part of said reactor for fluidizing said solid fuel and inert particles;

second inlet means for secondary gas located at a level above said first inlet means and to entrain a substantial portion of said solid fuel and inert particles in the flue gas stream produced by said means for combustion, said solid fuel, said inert particles and said first and said second inlet means;

third inlet means for air located at a level above said second inlet means for regulating continued combustion of particles of said solid fuel;

a superheated portion of said heat absorption circuits disposed above the outlet of said vertical reactor;

means for separation of particles of solid materials in said flue gas stream downstream of said superheated portion;

indirect heat exchange means receiving said particles separated from said flue gas stream and to transfer heat to another portion of said heat absorption circuits thereby cooling said separated particles substantially;

means for recycling said cooled separated particles as substantially inert material to said means for combustion and for association with said solid fuel;

means for removing ash from the recirculating loop of solids on a continuing basis maintaining equilibrium of solids in said combustion means;

means for controlling rate of discharge of said cooled separated particles from said indirect heat exchange means in response to flue gas temperature upstream and downstream of said third inlet means;

said means for combustion reheating said cooled inert solid particles, said reheating suppressing temperature of the mixture in said flue gas stream;

said means for controlling rate of discharge of said cooled separated particles to providing the amount of said solid material recirculated for maintaining combustion temperature in said downstream zone of said reactor at a level as 1800° F. and in said upstream zone of said reactor at a level as 1550° F. with provision for variation of temperature differential.

4,454,839

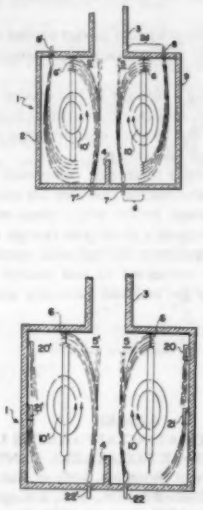
FURNACE

Roger A. Gater, Dover, and Herbert D. Michelson, Ft. Lee, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 2, 1982, Ser. No. 404,430
Int. Cl.³ F22B *21/24*
U.S. Cl. 122—333 **27 Claims**

7. A furnace comprising a radiant heating section in which there is at least one cell having a single or double row of vertical tubes defining a vertical tube plane, wherein there is a first row of burners on one side of the tube plane firing horizontally and a second row of burners on the other side of the tube plane firing horizontally in the opposite direction and offset horizontally from said first row a sufficient distance to form a forced vortex of combustion gases around said tube plane, which is of substantially elliptical shape and envelops said vertical tubes on both sides thereof, no row of burners being located directly opposite an opposed firing row.

25. A furnace comprising a radiant heating section having U-tubes, the straight segments of each U-tube being vertical with a U-bend connecting the straight segments, thereby forming two cells each having a row of segment vertical tubes defining a vertical tube plane, wherein for each tube plane: there is a first row of burners on one side of said tube plane firing in a first direction and a second row of burners on the other side of said tube plane firing in a second opposite direction and offset from said first row a sufficient distance to form a forced vortex of combustion gases around said tube plane,



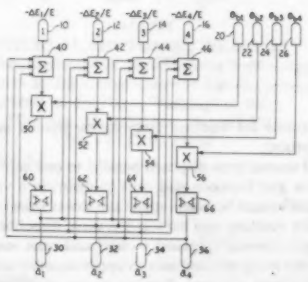
said vortex surrounding said tubes on both sides thereof and being of substantially elliptical shape, no row of burners being located directly opposite an opposed firing row.

4,454,840

ENHANCED SOOTBLOWING SYSTEM

Donald J. Dziubakowski, Seven Hills, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Jul. 14, 1983, Ser. No. 502,906
Int. Cl.³ F22B *37/52*
U.S. Cl. 122—390 **2 Claims**



1. A method of optimizing a sootblowing operation in a boiler having a plurality of heat traps lying in series along a gas flow path, comprising:

selecting a set time (θ_{bi}) between sootblowing operations of each heat trap based on a fouling model for the boiler;

calculating an optimum time (θ_{opt}) between sootblowing operations of each heat trap based on scaling parameters and a cost factor for the sootblowing operation;

obtaining a difference value between set and operating time for each heat trap comparing the difference value for each heat trap with a selected value which is indicative of the

desirability for initiating a sootblowing operation for each heat trap;

with the difference value equaling the selected value for only one heat trap, initiating sootblowing in that one heat trap;

with the difference value approaching the selected value for more than heat trap, delaying the initiation of sootblowing in a downstream one of the heat traps to permit the difference value to equal the selected value in an upstream one of the heat traps to initiate sootblowing in the upstream one of the heat traps before the initiation of sootblowing in a downstream one of the heat traps.

4,454,841

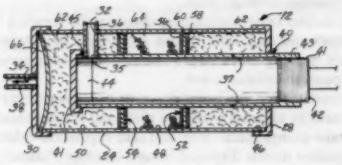
AUTOMATIC LIQUID THERMAL PRESSURE REGULATOR AND BALANCING SYSTEM

George G. Reinhard, Warren; Gordon L. Osgood, Sr., Romeo, and Ronald A. Kinde, Sr., Mount Clemens, all of Mich., assignors to Optimizer, Ltd., Flint, Mich.

Continuation-in-part of Ser. No. 172,471, Sep. 16, 1980, abandoned. This application May 6, 1981, Ser. No. 260,594

Int. Cl.³ F02M *27/02, 31/12*

U.S. Cl. 123—3 **10 Claims**



1. An automatic liquid thermal pressure regulator and balancing system adapted for use in an internal combustion engine having a carburetor and a fuel supply conduit for conducting fuel from a fuel supply to said carburetor comprising:

a housing having inlet and outlet ports, said housing adapted to be interposed with said fuel supply conduit between said fuel supply and said carburetor, with said outlet port of said housing adapted to be disposed in fluid flow communication with said carburetor;

a tubular member disposed within said housing and having an inlet and an outlet, said fuel supply conduit adapted to extend through said housing and be disposed in fluid flow communication with said inlet of said tubular member, said outlet of said tubular member disposed in fluid flow communication with the interior of said housing;

a heating element concentrically disposed within said tubular member and spaced therefrom;

first, second and third co-linear chambers formed within said housing, said outlet of said tubular member disposed in fluid flow communication with said first chamber and said outlet port of said housing disposed in fluid flow communication with said third chamber;

a metallic mesh material disposed within said first and third chambers surrounding said tubular member;

a catalytic agent disposed within said second chamber; and

wherein fuel enters said housing and flows through said tubular member from said inlet to said outlet and is heated by said heating element to a predetermined temperature, said fuel exiting through said outlet of said tubular member and flowing consecutively through said first, second and third chambers wherein it reacts with said catalytic agent before exiting through said outlet port of said housing.

4,454,842

INTERNAL COMBUSTION ENGINE WITH BEARING BEAM STRUCTURE

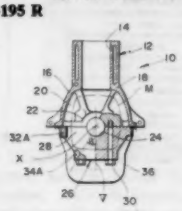
Naoki Ogawa, Yokosuka, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Apr. 13, 1982, Ser. No. 367,926

Claims priority, application Japan, May 20, 1981, 56-71881[U]

Int. Cl.³ F02B *19/00*

U.S. Cl. 123—195 R **6 Claims**



1. An internal combustion engine comprising:

a cylinder block having a plurality of cylinder barrels, and a plurality of bearing sections for journals of a crankshaft; and

a bearing beam structure secured to a bottom part of said cylinder block and including

a plurality of bearing cap sections each of which associates with each cylinder block bearing section to define a bore for rotatably receiving crankshaft journal,

first and second upper beam sections disposed parallel with an axis of the crankshaft and located respectively along two upper portions, opposite to each other with respect to the axis of the crankshaft, of each bearing cap section to securely connect said bearing cap sections to each other, said first and second upper beam sections being located in a vicinity of said cylinder block bottom part, and

first and second lower beam sections disposed parallel with the crankshaft axis and located respectively along two lower portions, opposite to each other with respect to the crankshaft axis, of each bearing cap section to securely connect said bearing cap sections to each other, said two lower portions being positioned apart from said first and second upper beam sections, each of said beam sections being separately spaced apart from one another in regions between adjacent bearing cap sections.

4,454,843

AUTOMATIC ENGINE STOP AND START SYSTEM

Shigekatsu Uchida; Takao Akatsuka, and Takahide Kawamura, all of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Mar. 30, 1982, Ser. No. 363,544

Claims priority, application Japan, Jul. 27, 1981, 56-117250

Int. Cl.³ F02N *17/00*

U.S. Cl. 123—179 B **4 Claims**

1. An automatic stop and start system for an engine of a motor vehicle for stopping the engine under a predetermined operating condition, comprising:

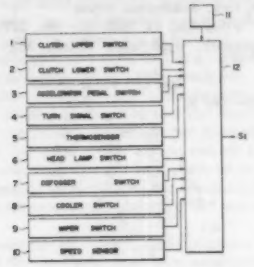
a first sensing means for sensing when the motor vehicle is making a turn across an opposite lane and for generating a corresponding output signal;

a second sensing means for sensing an additional electrical load and for generating a corresponding output signal;

a thermistor for sensing the temperature of engine coolant, said thermistor generating an "ON" signal when the sensed temperature is lower than a first predetermined temperature or higher than a second predetermined temperature which is higher than the first predetermined temperature; and

an electronic control unit which stops the engine under a predetermined operating condition, but does not stop the

engine even under a predetermined operating condition when said first or second sensing means generates said



output signals when said thermistor generates said "ON" signal.

4,454,844

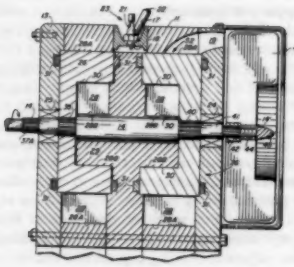
FOUR CYCLE ROTARY ENGINE EMPLOYING ECCENTRICAL MOUNTED ROTOR

Lewis R. Kinsey, 108 S. 25th St., Phoenix, Ariz. 85034

Continuation of Ser. No. 126,978, Mar. 3, 1980, abandoned. This application Mar. 8, 1982, Ser. No. 355,841

Int. Cl.³ F02B *53/08*

U.S. Cl. 123—236 **5 Claims**



1. A rotary engine comprising:

a housing having a rotary chamber,

said chamber comprising two compartments defining an intake compression zone and an expansion exhaust zone,

an elongated shaft journaled within said housing offset from the center line of said housing,

said shaft comprising a center section of a predetermined diameter and two end sections,

each end section comprising a plurality of portions with the diameter of each portion progressively decreasing in diameter from said center section toward each end of said shaft,

each end section comprising a splined portion immediately adjacent the end of said center section, a smooth bearing portion positioned outwardly of said splined portion and an end portion, said bearing portion forming a journal for said housing,

said two compartments of said chamber being separated by a center plate forming a part of said housing and extending substantially perpendicular to said shaft at substantially the center thereof,

two rotors, one slidably attached from a different end of said shaft, one to each splined portion for rotation therewith, the axis of said rotors being eccentrically positioned relative to the axis of said chamber, and said rotors being positioned one in each of said compartments,

pressure seals mounted within said housing in each of said two compartments and on each side of said center plate for engaging each side of each of said two rotors for maintaining pressure within said two compartments,

each of said rotors having a plurality of radial openings therein,

vane means disposed in each of said radial openings for relative sliding movement therewith and rotary movement along with said rotors,

a cam mounted in each of said compartments and having a surface for guiding the movement of said vane means upon rotation of said rotors,

said cam comprising a pear shaped configuration being mounted on said center plate through which said shaft extends in a close rotary arrangement with like surfaces in each of said compartments of said chamber,

air and fuel intake port means and an exhaust port, both mounted in said housing, said intake port means communicating with said intake compression zone and said exhaust port communicating with said expansion-exhaust zone,

the peripheral surface of said chamber and the outer periphery of said rotors defining between them a circumferential channel extending from said intake port to said exhaust port,

said exhaust port comprising a plurality of discharge slots spacedly positioned around said chamber adjacent said expansion-exhaust zone,

said channel in operation of said apparatus forming with said rotors and said vane means a plurality of rotating chambers moving from said intake-compression zone to said expansion-exhaust zone,

said center plate at a point along its outer periphery forming a transfer channel over said plate and interconnecting said intake-compression zone and said expansion-exhaust zone,

an ignition means disposed in said transfer channel to ignite a fuel air mixture supplied through said intake port means,

said vane means comprising a plurality of blades each having a length extending at all times substantially between the periphery surfaces of said chamber and the outer periphery of said cam, and

a fuel input nozzle connected to a port mounted on the periphery of said center plate adjacent said transfer channel and communicating with said channel for injecting fuel in said channel adjacent said ignition means.

4,454,845

DATA SAMPLING SYSTEM FOR ELECTRONIC ENGINE CONTROLLERS

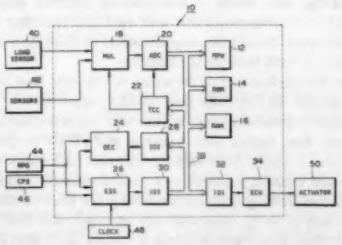
Sadao Takase, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 28, 1981, Ser. No. 315,611

Claims priority, application Japan, Oct. 30, 1980, 55-151496

Int. Cl.³ F02M *51/00*

U.S. Cl. 123—478 **12 Claims**



1. An electronic engine controller for controlling at least one

selected operation of an internal combustion engine based upon engine operating parameters, comprising:

(a) a load sensor for sensing engine load and generating an analog signal indicative of an existing value of engine load;

(b) a speed sensor for sensing engine speed and generating a signal indicative of an existing value of engine speed;

(c) a reference pulse generator for generating a reference pulse when an engine crankshaft reaches a reference position;

(d) an A/D converter responsive to a command signal for converting said analog signal indicative of engine load into a corresponding digital signal; and

(e) a control circuit including:

first means for determining from said signal indicative of engine speed, an offset angular position in the rotation of said engine crankshaft with respect to said engine crankshaft reference position; and

second means associated with said first means for providing said command signal to A/D converter when said engine crankshaft rotates to said determined offset angular position.

4,454,846

METHOD AND APPARATUS FOR CONTROLLING THE AIR-FUEL RATIO IN AN INTERNAL-COMBUSTION ENGINE

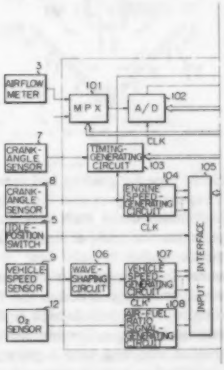
Yukio Suzuki, and Yoshihiko Matsuda, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jun. 21, 1983, Ser. No. 506,374

Claims priority, application Japan, Mar. 22, 1983, 58-46037

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—489 **12 Claims**



1. A method for controlling the air-fuel ratio in an internal-combustion engine disposed in a vehicle, comprising the steps of:

detecting whether or not said engine is in an idle state;

detecting whether or not the speed of said vehicle is greater than a predetermined value;

detecting whether or not the speed of said vehicle is zero;

measuring an elapsed timer period, depending upon the speed of said vehicle being zero;

detecting a specific component concentration in the exhaust gas of said engine to generate an air-fuel ratio signal depending upon whether the air-fuel mixture of said engine is on the rich side or on the lean side;

controlling the feedback of the air-fuel ratio of said engine so that said air-fuel ratio is close to the stoichiometric air-fuel ratio by using said air-fuel ratio signal, depending upon said engine being in the idle state or upon the speed of said vehicle being equal to or greater than said predetermined value; and

controlling the air-fuel ratio of said engine so that said air-fuel mixture is on the lean side, depending upon said engine being in the idle state and the speed of said vehicle being not zero and less than said predetermined value, or depending upon said engine being in the idle state and said elapsed time period being less than a predetermined time period.

4,454,847

METHOD FOR CONTROLLING THE AIR-FUEL RATIO IN AN INTERNAL COMBUSTION ENGINE

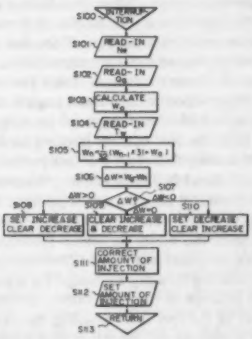
Shigenori Isomura, Kariya; Toshio Kondo, Anjo; Katsuhiko Kodama, Kariya; Akio Kobayashi, Kariya, and Shuji Sakakibara, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 16, 1981, Ser. No. 283,914

Claims priority, application Japan, Jul. 18, 1980, 55-98889; Jul. 18, 1980, 55-98890

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—492 **16 Claims**



1. An air-fuel ratio control method for an internal combustion engine having an intake port passage into which fuel is injected, comprising the steps of:

detecting the rotational speed of the engine to generate a first electrical signal which indicates the detected rotational speed N_e;

detecting the flow rate of air sucked into the engine to generate a second electrical signal which indicates the detected air flow rate Q_a;

detecting the warm-up condition of the engine to generate a third electrical signal which indicates the detected warm-up conditions T_c;

calculating a fuel-injection pulse-width W_o in accordance with said first and second electrical signals;

calculating a wall-temperature T_w of said intake port passage using said third electrical signal;

damping said fuel injection pulse-width W_o in accordance with a predetermined filtering function to obtain a damped signal;

subtracting said damped signal from said fuel-injection pulse-width W_o to generate a first correction value;

generating a second correction value from said wall temperature T_w; and

determining a desired fuel injection amount from said fuel-injection pulse-width W_o, said first correction value and said second correction value.

4,454,848

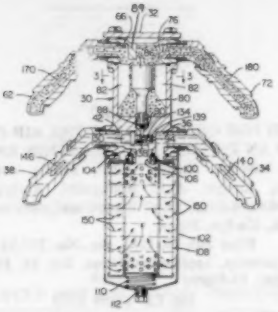
DIESEL FUEL CONTROL APPARATUS AND SYSTEM

Wayne R. Duprez, Standard-Thomson Corporation, 152 Grove St., Waltham, Mass. 02154

Continuation-in-part of Ser. No. 303,486, Sep. 18, 1981, which is a continuation of Ser. No. 57,398, Jul. 13, 1979, abandoned. This application Aug. 25, 1982, Ser. No. 411,257

Int. Cl.³ F02M *55/00, 31/00*

U.S. Cl. 123—516 10 Claims



1. For use in a diesel system in which a diesel engine is supplied with fuel from a fuel supply tank and in which the diesel engine consumes a portion of the fuel and in which a mixture of excess heated fuel and entrained air flows from the diesel engine, the combination: a diesel fuel control housing adapted to be attached to the diesel engine, the fuel control housing having a fuel inlet passage for receiving fuel from the fuel supply tank, the fuel control housing having a fuel outlet passage for directing fuel from the fuel control housing to the diesel engine, a diesel fuel filter housing removably attached to the diesel fuel control housing and supported by the fuel control housing, the fuel control housing forming a diesel fuel control chamber, the diesel fuel filter housing forming a fuel filter chamber provided with a fuel filter element therein, the fuel control housing forming a passage for directing fuel from the fuel inlet passage of the fuel control housing into the fuel filter chamber of the fuel filter housing, the fuel control housing forming a passage for directing fuel from the fuel filter chamber of the fuel filter housing into the fuel outlet passage of the fuel control housing, the fuel control housing forming a connecting passage between the fuel control chamber and the fuel inlet passage of the fuel control housing, the fuel control housing forming passages for directing a mixture of excess heated fuel and entrained air into the fuel control chamber from the diesel engine and for directing air to the fuel supply tank, and a buoyantly operable valve member within the fuel control chamber and controlling flow of heated fuel from the fuel control chamber through the connecting passage and to the fuel inlet passage.

4,454,849

CANISTER FOR INTERNAL COMBUSTION ENGINE

Junzi Mizuno; Akira Fukami; Kunio Okamoto, and Takeshi Ishii, all of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio and Nippondenso Co., Ltd., Kariya, both of, Japan

Filed May 21, 1982, Ser. No. 380,907

Claims priority, application Japan, May 22, 1981, 56-78506

Int. Cl.³ F02M *37/00*

U.S. Cl. 123—519 7 Claims

1. A canister to be installed in a fuel (supplying) system of a vehicle, comprising:

a housing having opposed end walls;

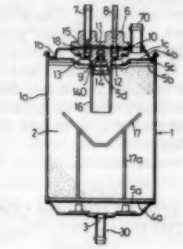
a bed of fuel vapor adsorbent material which is provided between said opposed end walls within said housing;

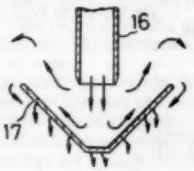
a space being formed between one end surface of said bed and one of said opposed end walls;

a fuel vapors inlet port for introducing fuel vapors into said housing from a fuel tank, which is formed in said one end wall of said housing;

an air suction port for introducing air into said housing, which is formed in the other end wall of said housing;

a purged vapors outlet port for introducing a mixture of fuel vapors purged from said adsorbent material, and air sucked from said air suction port, into an intake passage of an internal combustion engine of said vehicle, which is formed in said one end wall of said housing;





a fuel vapors guiding pipe for guiding fuel vapors introduced from said fuel vapors inlet port into the midportion of said bed, which is communicated with said fuel vapors inlet port and projects into the mid-portion of said bed, passing through said space; and

a deflecting member for deflecting the flowing direction of fuel vapors introduced into said bed so that fuel vapors are dispersed throughout said bed, which is formed of air-permeable material having a flowing resistance slightly larger than that of said bed, into a plate shape, and is buried within said bed so as to be opposed to a projecting end of said fuel vapors guiding pipe.

4,454,850

APPARATUS AND METHOD FOR ENERGY CONVERSION

Stephen Horvath, St. Ives, Australia, assignor to Beeston Company Limited, Hong Kong

Continuation of Ser. No. 56,863, Jul. 12, 1979, abandoned. This application Nov. 4, 1981, Ser. No. 318,173

Claims priority, application Australia, Jul. 14, 1978, PD5083

Int. Cl.³ F02M *27/06*

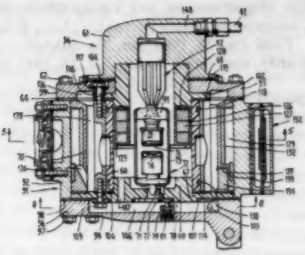
U.S. Cl. 123—537 2 Claims

1. Apparatus comprising, in combination:

gaseous fuel burning plant having a combustion chamber to receive gaseous fuel;

means to produce ionised hydrogen gas, including a radiation tube, a vessel defining an annular gas flow passage surrounding said radiation tube for flow of a hydrogen gas therethrough, and electrical supply means to supply energy to the radiation tube so as to produce electromag-

netic radiation of wavelength less than 10^{-10} meters to irradiate hydrogen gas flowing through said passage;



means to introduce said ionised hydrogen gas together with an oxidising gas into said chamber; and

means to create an electrical discharge within the chamber.

4,454,851

DEVICE FOR ECONOMICALLY PREHEATING FUEL BY RECOVERING ENERGY FROM THE FUEL ITSELF

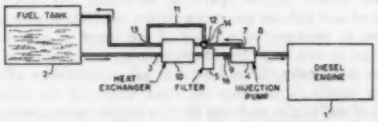
Marc Bourbonnaud, Ville d'Avray, and Jean Thelinge, Le Vesinet, both of France, assignors to Sarl Inotec, Ville D'Avray, France

Filed Feb. 8, 1982, Ser. No. 347,064

Claims priority, application France, Feb. 10, 1981, 81 03328

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 **1 Claim**



1. A fuel supply system of an internal combustion engine comprising a fuel tank, a heat exchanger, a fuel filter and an injection pump, said heat exchanger being apart from any exhaust gas line of said engine and having only a first through passage and a second through passage in heat-exchanging relation to one another, fuel supply lines series connecting said fuel tank with said first passage of said heat exchanger, connecting said first passage of said heat exchanger with said filter and connecting said filter with said injection pump, and fuel return lines series connecting said fuel pump with said second passage of said heat exchanger and connecting said second passage of said heat exchanger with said fuel tank to return excess fuel from said fuel pump through said fuel return lines and said heat exchanger to said fuel tank, whereby heat imparted to fuel by said injection pump is in part transmitted from returned excess fuel through said heat exchanger to fuel in said supply lines upstream of said filter and returned fuel is thereby cooled, all of the excess fuel from said injection pump being returned to said fuel tank branch fuel return line by-passing said heat exchanger, valve means operative to pass said excess fuel from said injection pump alternatively through said heat exchanger or through said by-pass line, and means controlling said valve means, said control means comprising heat sensing means in said fuel supply line between said filter and said injection pump and operative to control said valve means to pass excess fuel through said by-pass line when the temperature sensed by said heat sensing means is above a predetermined valve.

4,454,852

ELECTRONIC FUEL INJECTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES HAVING EXHAUST GAS RECIRCULATION CONTROL DEVICES

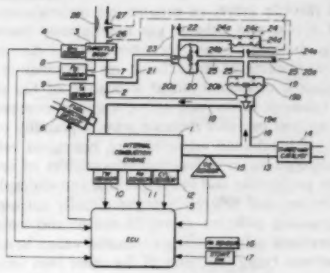
Shumpei Hasegawa, Niiza, Japan, assignor to Honda Motor Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1982, Ser. No. 442,097

Claims priority, application Japan, Nov. 19, 1981, 56-185765

Int. Cl.³ F02M *25/06*; F02B *3/08*; F02D *17/00*

U.S. Cl. 123—568 **3 Claims**



1. In an electronic fuel injection control system for use with an internal combustion engine of the type having an intake pipe, an exhaust pipe, a throttle valve arranged in said intake pipe, and at least one fuel injection valve disposed to inject fuel being supplied to said engine, a valve opening period of which determines a fuel injection quantity thereof, the combination comprising: an exhaust gas recirculation passage communicating the exhaust pipe of the engine with the intake pipe thereof at a location downstream of said throttle valve; an exhaust gas recirculation valve arranged across said exhaust gas recirculation passage; means for controlling the valve opening of said exhaust gas recirculation valve so as to maintain the ratio of a quantity of exhaust gases being recirculated through said exhaust gas recirculation passage to a total quantity of intake air being supplied to the engine through the intake pipe, at a constant value; a sensor for detecting a value of engine rpm; a sensor for detecting a value of absolute pressure in the intake pipe of the engine; a sensor for detecting a value of ambient atmospheric absolute pressure; means for determining a basic valve opening period of said fuel injection valve as a function of values of engine rpm and intake pipe absolute pressure detected, respectively, by said engine rpm sensor and said intake pipe absolute pressure sensor, and generating a first signal indicative of the determined basic valve opening period; means for correcting the value of said first signal as a function of values of intake pipe absolute pressure and atmospheric absolute pressure detected, respectively, by said intake pipe absolute pressure sensor and said atmospheric absolute pressure sensor, and generating a second signal indicative of the corrected valve opening period; and means for driving said fuel injection valve to open same for a period of time corresponding to the value of said second signal.

4,454,853

ELECTRONIC FUEL INJECTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES HAVING EXHAUST GAS RECIRCULATION DEVICES

Shumpei Hasegawa, Niiza, Japan, assignor to Honda Motor Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1982, Ser. No. 443,563

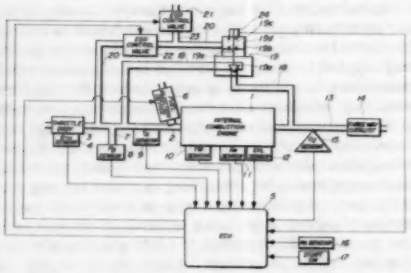
Claims priority, application Japan, Nov. 20, 1981, 56-186632

Int. Cl.³ F02M *25/06*; F02B *3/08*; F02D *17/00*

U.S. Cl. 123—571 **7 Claims**

1. In an electronic fuel injection control system for use with an internal combustion engine of the type having an intake

passage, an exhaust passage, a throttle valve arranged in said intake passage, and at least one fuel injection valve disposed to inject fuel being supplied to said engine, a valve opening period of which determines the fuel injection quantity, the combination comprising: a first sensor for detecting a value of engine rpm; a second sensor for detecting a value of absolute pressure in said intake passage of said engine at a location downstream of said throttle valve; a third sensor for detecting a value of ambient atmospheric absolute pressure; an exhaust gas recirculation passage communiating said exhaust passage of said engine with said intake passage of same at a location downstream of said throttle valve; an exhaust gas recirculation valve arranged across said exhaust gas recirculation passage; valve opening command means for determining a desired value of the valve opening of said exhaust gas recirculation valve and generating a command singal indicative of the determined valve opening value, said valve opening command means including first memory means storing a plurality of different sets of predetermined valve opening command values previously determined as a function of variables of engine rpm, absolute pressure in said intake passage and atmospheric absolute pressure, said different sets individually corresponding to predetermined different values of one of said variables, said predetermined valve opening command values in each of said different sets being functions of the other two variables, and means responsive to output signals from said first sensor, said second sensor and said third sensor to selectively read at last



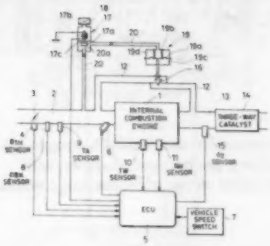
one predetermined valve opening command value corresponding to said output signals from at least one corresponding set of said different sets of predetermined valve opening command values; means responsive to said command signal indicative of the read predetermined valve opening command value to control the valve opening of said exhaust gas recirculation valve; whereby a quantity of exhaust gases being recirculated through said exhaust gas recirculation passage is maintained at a constant value with respect to a total intake air quantity being supplied to said engine through said intake passage, irrespective of changes in the ambient atmospheric pressure; means for determining a desired value of a basic valve opening period for said fuel injection valve and generating a first signal indicative of the determining desired valve opening period value, said basic valve opening period determining means including second memory means storing a plurality of predetermined basic valve opening period values being functions of engine rpm and absolute pressure insaid intake passage, and means responsive to output signals from said first sensor and said second sensor to selectively read as a value of said first signal a desired predetermined basic valve opening period value from said second memory means, corresponding to said output signals; means responsive to output signals from said second sensor and said third sensor to correct the value of said first signal and generating a second signal indicative of the corrected valve opening period value; and means responsive to said second signal to drive said fuel injection valve to open for a period of time corresponding to said second signal.

4,454,854

EXHAUST GAS RECIRCULATION CONTROL METHOD FOR INTERNAL COMBUSTION ENGINES FOR VEHICLES

Osamu Gotoh, Higashikurume, and Yutaka Otobe, Shiki, both of Japan, assignors to Honda Motor Co., Ltd., Tokyo, Japan

Filed Jun. 13, 1983, Ser. No. 503,680
Claims priority, application Japan, Jun. 18, 1982, 57-104803
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—571 **8 Claims**



1. A method for controlling the recirculation of exhaust gases emitted from an internal combustion engine for a vehicle through a passage means connecting between an exhaust passage of said engine and an intake passage thereof, in response to operating conditions of said engine, the method comprising the steps of: (1) setting an operating region of said engine wherein the recirculation of exhaust gases is to be effected, as a function of the rotational speed of said engine and another engine operation parameter indicative of the quantity of intake air being supplied to said engine; (2) detecting the speed of said vehicle; (3) detecting the rotational speed of said engine and the value of said another engine operation parameter; (4) varying the range of said exhaust gas recirculation effecting region of said engine, in response to a value of the speed of said vehicle detected in said step (2); (5) determining whether or not said engine is operating in said exhaust gas recirculation effecting region varied in said step (4), from values of the rotational speed of said engine and said another engine operation parameter detected in said step (3); and (6) effecting the recirculation of exhaust gases while it is determined in said step (5) that said engine is operating in said varied exhaust gas recirculation effecting region.

4,454,855

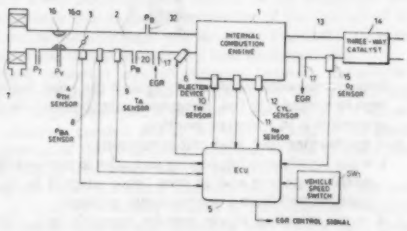
FUEL SUPPLY CONTROL METHOD AND SYSTEM FOR INTERNAL COMBUSTION ENGINES EQUIPPED WITH EXHAUST GAS RECIRCULATION CONTROL SYSTEMS

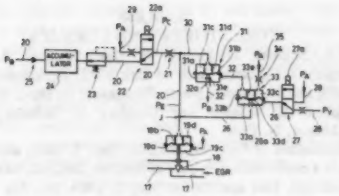
Yutaka Otobe, Shiki, and Noriyuki Kishi, Tokyo, both of Japan, assignors to Honda Motor Co., Ltd., Tokyo, Japan

Filed Jul. 1, 1983, Ser. No. 510,403
Claims priority, application Japan, Jul. 8, 1982, 57-118940
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—571 **16 Claims**

11. An electronic fuel supply control system for an internal combustion engine, said engine including an intake passage, an exhaust passage, exhaust gas recirculation control means for controlling the recirculation of part of exhaust gases emitted from said engine from said exhaust passage to said intake passage, said exhaust gas recirculation control means including an exhaust gas recirculating passage communicating said exhaust passage with said intake passage, a control valve arranged in said exhaust gas recirculating passage for controlling the quantity of exhaust gases being recirculated, means for generating hydraulic pressure, means responsive to said hydraulic pressure for selectively closing and opening said control valve, a communication passage for supplying said hydraulic pressure generated by said hydraulic pressure generating means to said

hydraulic pressure responsive means, an electromagnetic valve arranged in said communication passage and operable to allow supply of said hydraulic pressure to said hydraulic pressure responsive means when energized, and to allow supply of atmospheric pressure to said hydraulic pressure responsive means when deenergized, means for detecting a value of a first parameter indicative of operating conditions of said engine and generating a first signal indicative of a detected value of said first parameter, and control means responsive to said first signal from said first parameter value detecting means, for generating a driving signal for energizing said electromagnetic valve, and fuel supply means for supplying fuel to said engine, said electronic fuel supply control system comprising: driving means for driving said fuel supply means; means for detecting a value of a second parameter indicative of operating conditions of said engine and generating a second signal indicative of a detected value of said second parameter; means for detecting a value of a third parameter indicative of operating conditions of said engine and generating a third signal indicative of a





detected value of said third parameter; storage means storing first and second sets of basic values of fuel quantity set as a function of at least said second and third parameters; means for selecting said first set of basic values of fuel quantity when said driving signal for energizing said electromagnetic valve is not generated, and selecting said second set of basic values of fuel quantity when said driving signal is generated; and means for reading from said selected set of basic values of fuel quantity a basic value of fuel quantity corresponding to at least detected values of said second and third parameters from said second and third parameter value detecting means and supplying a signal indicative of said read basic value of fuel quantity to said driving means; said driving means being adapted to drive said fuel supply means to supply a quantity of fuel corresponding to said read basic value of fuel quantity to said engine; said second set of basic values of fuel quantity stored in said storage means being smaller in value than said first set of basic values of fuel quantity stored in said storage means so far as they correspond to the same combination of values of said at least second and third parameters.

4,454,856

DISTRIBUTOR CONSTRUCTION AND SIGNAL GENERATOR

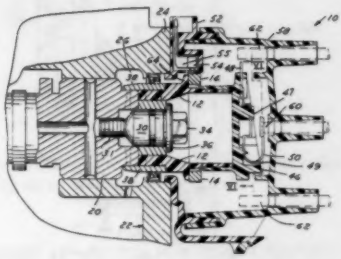
David H. Fox, Ann Arbor; Charles C. Kostan, Canton Township, Plymouth County, and Frank B. Casaceli, Mt. Clemens, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US82/01167, 371 Date Aug. 27, 1982, 102(e) Date Aug. 27, 1982

PCT Filed Aug. 27, 1982, Ser. No. 432,892

Int. Cl.³ F02P 7/00

U.S. Cl. 123—617 **7 Claims**



1. A timing system in an internal combustion engine having a camshaft for producing an electric signal in synchronism with the periodic movement of an engine part, said signal being subjected to a variable phase shift and controlling a cyclic operation of said engine, comprising:

a permanently magnetized ring mounted on an intermediate shaft member directly coupled to the engine camshaft and oriented in a plane perpendicular to the axis of rotation, said ring having a plurality of alternating north and south magnetic poles;

a bipolar Hall-type crank position sensor means positioned adjacent said magnetized ring for detecting passage of magnetic poles on said mgnetized ring;

said magnetized ring having a plurality of adjacent north and south magnetic poles; and

said bipolar Hall-type sensor responding with two polarities to the passage of north and south magnetic poles on said magnetized ring.

4,454,857

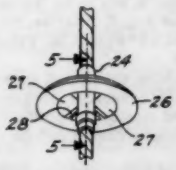
PEEP SIGHT FOR A BOW

Allen W. Miller, 32 Champayne Dr., Lake St. Louis, Mo. 63367; Cornelius F. Carroll, 1310 Tuxedo Ave., Parma, Ohio 44134, and Lloyd E. Abernathy, 10922 Killdare Ct., St. Anns, Mo. 63074

Filed Sep. 28, 1982, Ser. No. 425,226

Int. Cl.³ F41B 5/00

U.S. Cl. 124—87 **6 Claims**



1. A peep sight for mounting on the bow string of an archery bow comprising a disc having a central, elongated, hollow hub portion extending perpendicularly from the plane of said disc for receiving a bow string, a continuous rim portion, and a

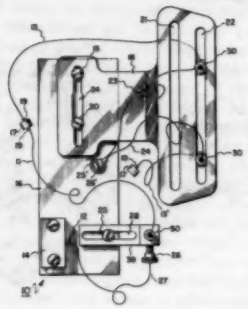
plurality of angularly spaced sighting apertures therein and extending from said rim portion to said central hub portion.

4,454,858

DRAW LENGTH INDICATOR FOR HUNTING BOW

Thomas J. Henry, 593 Sand Creek Rd., Albany, N.Y. 12203

Filed Nov. 6, 1981, Ser. No. 318,825
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—88 **7 Claims**



1. A draw length and arrow pivot indicator for an archery bow which includes a flexible member operatively bending substantially in a plane containing the flexible member, said indicator comprising:

a base plate for attachment to said bow;

signal means affixed to said base plate for providing an indication of readiness in response to the operative positioning of an arrow in said bow;

battery means for supplying electrical energy to said signal means;

magnetic switch means, attached to said base plate for electrically connecting said battery means to said signal means so as to actuate said signal means, said switch means being disposed so as to extend forwardly from said bow, in the direction traversed by a released arrow, said switch means being operative to connect said battery means to said signal means to provide an indication that an arrow positioned in said bow has been drawn back a specified distance and to provide an indication that said arrow lies substantially in the plane defined by said flexible member, whereby an arrow readiness signal is provided when the arrow has been drawn back to a specified position and when the arrow is simultaneously disposed substantially in the plane defined by said flexible member, said plane being substantially the plane in which said flexible member bends.

4,454,859

COLLAPSIBLE BURNER SUPPORT APPARATUS

Floyd Vincent, Rte. 2, Box 66 M, Kaplan, La. 70548

Filed Aug. 5, 1981, Ser. No. 290,378
Int. Cl.³ F24C *5/20*; F16M *11/38*
U.S. Cl. 126—38 **1 Claim**

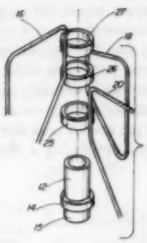
1. A collapsable burner support apparatus, comprising:

a. a substantially cylindrical elongated burner support hub member, said member vertically disposed during operation and having a central fuel gas conveying port therethrough;

b. a plurality of collar members disposed around substantially the entire length of said support hub member, the lowermost and uppermost of collar members being rigidly attached to said hub member and the collar members therebetween being rotatably moveable about a vertical axis around said support hub member;

c. at least three leg members, two of which are rigidly attached to rotatable collar members, for moving between a radially outwardly support position to a storage position, and said third leg member rigidly attached to at least one of said rigidly attached collar members, each of said leg members including a lower foot portion resting on a support surface and an upper support portion for supporting a container or pot thereon;

d. wherein at least two of said leg members are attached to said collar members at an angle other than a 90° angle to the tangent to said collar members, so that said leg members are disposed substantially against the other leg members in a relatively flat, juxtaposed relationship when said apparatus is in a storage position;



e. a gas burning unit, said unit comprising:

i. a gas supply conduit having an outlet in connectable to said burner unit and an inlet being adapted to receive gaseous fuel from a source under pressure;

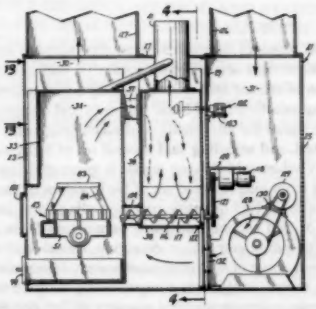
ii. a gas injecting nipple portion insertible into said gas conveying opening in said hub member, said nipple conveying gas out of the top of said hub member during use of said apparatus.

4,454,860

FUEL STOKER AND FURNACE

Tony L. Schafer, Dickinson, N. Dak.; Stephen A. Schafer; Gregory L. Schafer, both of Box 1382, Dickinson, N. Dak. 58601, and H. Darwin Swett, Dickinson, N. Dak., assignors to Stephen A. Schafer and Gregory L. Schafer, both of Dickinson, N. Dak.

Continuation of Ser. No. 309,245, Oct. 7, 1981, abandoned, which is a continuation-in-part of Ser. No. 240,213, Mar. 3, 1981, abandoned. This application May 2, 1983, Ser. No. 490,774
Int. Cl.³ F24H *3/06*
U.S. Cl. 126—110 R **12 Claims**



1. A hot air furnace for burning solid fuel comprising:

a furnace cabinet having walls defining a furnace compartment;

a primary heat exchange unit located in the furnace compartment and defining a combustion chamber;

a solid fuel burner assembly located in the combustion chamber;

a fuel ash depository located beneath the burner assembly for collection of ash produced as a result of burning fuel;

a secondary heat exchange unit positioned adjacent the primary heat exchange unit having an interior for receipt of products of combustion from the primary heat exchange unit;

an upper crossover conduit connecting the upper portion of the interior of the primary heat exchange unit and the upper portion of the interior of the secondary heat exchange unit;

a tertiary heat exchange unit positioned adjacent the secondary heat exchange unit and positioned so that the secondary heat exchange unit and tertiary heat exchange unit are in side-by-side relationship facing the primary heat exchange unit, said tertiary heat exchange unit having an interior for receipt of products of combustion from the secondary heat exchange unit;

a lower generally V-shaped crossover conduit connecting the lower portion of the interior of the secondary heat exchange unit to the lower portion of the interior of the tertiary heat exchange unit along the length thereof in the direction facing the primary heat exchange unit;

a third crossover conduit extended between the primary heat exchange unit and the secondary and tertiary heat exchange units, open at one end to the generally V-shaped crossover conduit and at the opposite end to the lower portion of the combustion chamber of the primary heat exchange unit proximate the fuel ash depository;

a fly ash conveyor screw assembly including a fly ash conveyor screw rotatably located in the generally V-shaped crossover conduit and extending through the third crossover conduit operative to move fly ash from the generally V-shaped crossover conduit through the third crossover conduit to be deposited in the ash depository located in the primary heat exchange unit;

means for selective rotation of the fly ash screw conveyor;

the walls of the secondary and tertiary heat exchange units being adapted for vibration thereof to dislodge fly ash and cause it to drop by gravity into the generally V-shaped crossover conduit;

means for vibration of the walls of the secondary and tertiary heat exchange units; and

flue means communicative with the tertiary heat exchange unit for discharge of products of combustion.

4,454,861

FLUID FRICTION HEATER

Wilfred J. Grenier, Rutland, Mass., assignor to Raymond E. Shea, Holden, Mass.

Continuation of Ser. No. 34,828, Apr. 30, 1979, Pat. No. 4,277,020. This application Mar. 20, 1981, Ser. No. 245,569

Int. Cl.³ F22B *37/10*

U.S. Cl. 126—247 **6 Claims**

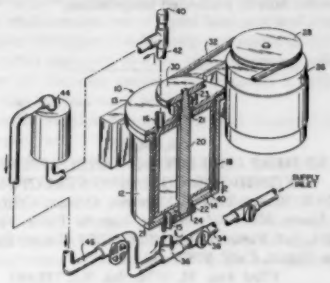
1. A fluid friction heater comprising;

a housing having a cylindrical inner surface with at least nearly circumferentially directed, closely spaced grooves formed therein, the depth of said grooves being small relative to the diameter of the cylindrical inner surface;

a drum mounted within the housing and having a cylindrical outer surface in close proximity to the cylindrical inner surface of the housing, said outer surface having at last nearly circumferentially directed, closely spaced grooves formed therein, the depth of said grooves being small relative to the diameter of the cylindrical outer surface, the grooves in said inner surface and the grooves in said outer surface being arranged so as to produce longitudinal crossing therebetween in response to relative rotation between said housing and said drum;

means for injecting a liquid into the space between the cylindrical inner surface of the housing and the cylindrical outer surface of the drum; and

means for causing relative rotation between the cylindrical inner surface of the housing and the cylindrical outer surface of the drum to subject the liquid to agitation and shearing action which heats the liquid.



4,454,862

WARMER APPARATUS FOR HORTICULTURE FACILITIES UTILIZING SOLAR HEAT

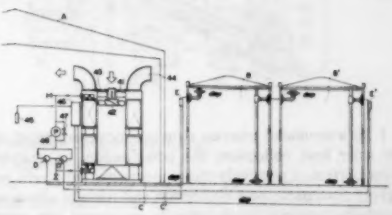
Ryusuke Kamanaka, c/o Nepon Co. Ltd., No. 4-2, Shibuya 1-chome, Shibuya-ku, Tokyo-to, Japan

Filed Sep. 21, 1981, Ser. No. 304,074

Claims priority, application Japan, Oct. 1, 1980, 55-135809

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—421 **1 Claim**



1. A warmer apparatus for horticulture facilities utilizing solar heat comprising in combination:

a heat exchange means of a water-air counterflow type for selectively transferring heat from solar heated air in a greenhouse to unheated storage water in a pair of heat storage tanks and transferring heat from heated storage water in said tanks to unheated air in said greenhouse;

a piping means connecting said pair of heat storage tanks to each other and connecting said tanks to said heat exchange means for transporting said storage water to and from said heat exchange means and between said tanks;

a valve means in said piping means for selectively controlling the flow of said storage water from said heat storage tanks to said heat exchange means;

a pump means connected to said piping means for pumping said storage water between said heat exchange means and said heat storage tanks;

a first sensor means in said greenhouse for detecting the temperature of said air within said greenhouse;

a second sensor means associated with said heat storage tanks for detecting the temperature of said storage water in said heat storage tanks; and

a control means connected and responsive to said first and second sensor means to start and stop operation of said heat exchange means and said pump means and to operate said valve means to transfer heat from the air in said greenhouse to said storage water in said heat storage tanks

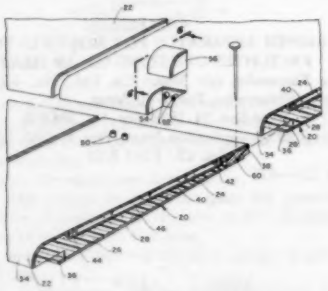
until said water is heated to a desired temperature and to transfer heat in said storage water in said storage tanks to the air in said greenhouse until the heat in said storage water falls to a selected temperature.

4,454,863

SOLAR HEAT COLLECTING PANEL ASSEMBLY AND METHOD FOR COVERING STRUCTURES

Donald P. Brown, 2901 E. Hillcrest, Orange, Calif. 92667; Ian R. Jones, 30817 Via Rivera, Rancho Palos Verdes, Calif. 90274, and Victor V. Vurpillat, 30751 Greens East Dr., Laguna Niguel, Calif. 92677

Filed Aug. 30, 1976, Ser. No. 718,665
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—432 26 Claims



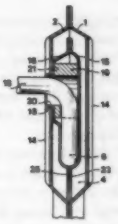
1. In a simulated exterior structure covering panel adapted for solar heat collection; the combination: an exterior face layer portion of relatively thin non-transparent plastic material having reasonable heat absorption and transfer characteristics extending between panel normally positioned side, upper and lower edge portions, said face layer portion being exteriorly finished to simulate standard structure covering materials such as panels of standard roofing and siding including standard shingles, tile and the like; a multiplicity of divider sections extending interiorly from said face layer portion positioned defining a multiplicity of fluid circulating channels continuously between certain panel edge portions directly underlying said face layer portion and hidden from face layer exterior view by said face layer portion; interior means formed at interior side of said divider sections interiorly closing off said fluid circulating channels including an interior mounting surface adapting said panel for mounting against said structure exterior as a standard structure covering panel; fluid circulating connector means at certain of said edge portions for fluid flow connecting said fluid circulating channels to similar connector means and channels of similar adjacent panels when in a normal standard structure covering assemblage, said connector means being positioned for being substantially hidden from exterior view when in said fluid flow connecting functioning in said standard structure covering assemblage and in cooperation with said exterior face standard structure covering simulation while hiding said fluid circulating channels from exterior view giving panel appearance of a standard structure covering panel in a similar assemblage and without said channels; said simulated exterior structure covering panel incorporating its fluid circulating channels having structural strength at least substantially equivalent to the standard structure covering materials being simulated.

4,454,864

SOLAR COLLECTOR COMPRISING A HEAT EXCHANGER

Michiel J. Duncker, Arnhem, and Johan R. Kreetz, Laag Soeren, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Filed Jan. 22, 1981, Ser. No. 227,529
Claims priority, application Netherlands, Jan. 25, 1980, 8000469
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—433 13 Claims



1. A solar collector comprising:
- a closed casing having a substantially rectangular cross-section, from which non-condensable gases are at least substantially removed;
- a collector thermally connected to the casing and serving to convert solar rays into heat;
- a working medium contained in the casing, which working medium, in operation of the collector, is partly in the liquid and partly in the vapor state;
- an evaporating region in the casing, in which region the liquid working medium can evaporate under the influence of heat emitted by the collector;
- a condensation region in the casing, in which region the vaporous working medium can condense;
- a passage connecting the evaporating region and the condensation region permitting the internal return of condensed working medium to the evaporating region; and
- a heat exchanger which is in thermal contact with the condensation region for the discharge of heat of condensation to a heat storage medium contained in the heat exchanger, said condensation region including an inwardly folded wall which forms a space partially closed off from the ambient environment, which space is disposed within the outer boundary of the casing, but in isolation with the interior of the casing, said heat exchanger being accommodated in said space and in thermal contact with said folded wall, said heat exchanger including means defining an enclosed passageway for said heat storage medium in which the heat storage medium is separated from the working medium confined in the casing by said inwardly folded wall and by said heat exchanger.

4,454,865

LIQUID METAL SOLAR POWER SYSTEM

Bobby J. Tammen, Rte. 2 - Box 233, Colorado City, Tex. 79418

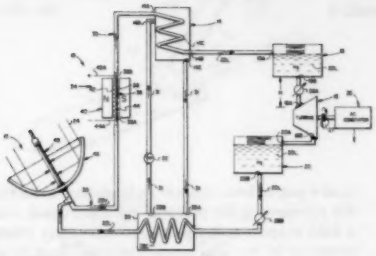
Filed Jun. 7, 1982, Ser. No. 385,786
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—438 2 Claims

1. A solar power assembly for converting solar radiation to thermal energy comprising, in combination:
- a solar concentrator having a reflector envelope and a fluid chamber enclosed by said envelope, said envelope having a transparent, concave panel forming a sidewall boundary for said chamber and an inlet port for admitting working fluid into said chamber;
- a tubular receiver disposed within the focus of said concave

panel, said receiver having an absorption passage connected in communication with said concentrator chamber;

a volume of liquid working fluid disposed in said concentrator chamber and receiver passage, said liquid working fluid in combination with said transparent concentrator panel defining a reflective surface for focusing solar radiation onto said receiver;

a condenser having a working fluid passage and a cooling water passage, said working fluid passage having an inlet port connected in fluid communication with the absorption passage of said receiver tube and having an outlet port;



a working fluid reservoir having an inlet port connected to the outlet port of said condenser, and having an outlet port; and,

a flow regulator connected in series fluid circuit relation between the outlet port of said working fluid reservoir and the absorption passage of said receiver for controlling the volume of working fluid admitted into said concentrator chamber.

4,454,866

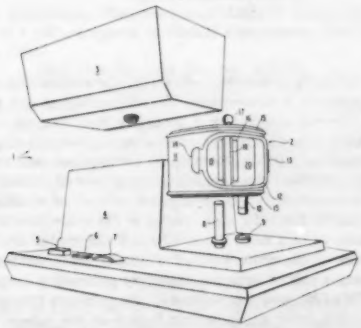
BATHROOM APPLIANCE FOR CONCURRENTLY SHARPENING RAZOR BLADES AND TREATING GUM TISSUE BY SPACED PRESSURE PULSES OF LIQUID

Carl F. Fayen, 1021 Westwood Dr., Durham, N.C. 27707

Filed Sep. 16, 1981, Ser. No. 302,558

Int. Cl.³ A61H *9/00*

U.S. Cl. 128—38 **9 Claims**



1. Apparatus for sharpening single or double edged razor blades and for concurrently treating gum tissue by applying spaced pressure pulses of liquid to depress discrete areas of gum tissue with the spacing of said pulses one from the other of duration which provides for rebound time for said gum tissue comprising a gum-treating modular assembly comprising:

(a) a liquid pump having an intake port, a discharge port and means for supplying time-spaced pressure pulses of liquid to said discharge port;

(b) a reservoir for holding a supply of said liquid, said reservoir being provided with a liquid level indicator designating the minimum amount of liquid needed in said reservoir to require operation of said pump and motor to the minimum extent necessary to drive said sharpening roller the number of rotations required to maintain a uniformly sharp edge on said razor blade;

(c) means for supplying liquid from said reservoir to said intake port; and

(d) a motor for driving said pump means; and a razor blade sharpening modular assembly comprising

(e) a sharpening roller rotatably driven by said motor; and

(f) a blade holder having its axis parallel to the axis of said roller for holding said razor blade with its edge against said sharpening roller in sharpening contact therewith.

4,454,867

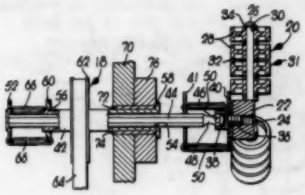
THERAPEUTIC CHAIR ASSEMBLY

Russell K. Swanson, 3212 Coleman Rd., Kansas City, Mo. 64111

Filed Apr. 20, 1983, Ser. No. 486,931

Int. Cl.³ A61H *15/00*

U.S. Cl. 128—57 **7 Claims**



1. A massage device comprising:

an elongated shaft;

at least one elongated arm, said arm normally lying in a reference plane transverse to the longitudinal axis of the shaft;

means mounting said arm adjacent one end of said shaft in an outwardly extending relationship to said shaft, said means including structure for limited pivoting movement of said arm out of said reference plane and a mounting hub having a first end adjacent said outwardly extending arm and a second end presenting structure defining a polygonal in cross-section socket, said shaft including an elongated axle having a polygonal in cross-section ball complemental with said socket, said ball being received in said socket for simultaneous rotation of said shaft and hub and for said limited pivoting movement of said arm;

a massage element rotatably carried on said arm; and

means for axially rotating said shaft to effect corresponding rotation of said arm.

4,454,868

LOW FORCE SKELETAL ADJUSTING DEVICE

Phillip E. George, Rock Island, Ill., assignor to Specialty Devices, Inc., Davenport, Iowa

Filed Apr. 5, 1982, Ser. No. 365,524

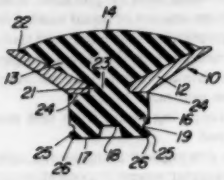
Int. Cl.³ A61F *5/00*

U.S. Cl. 128—69 **11 Claims**

1. A device for application of force by the human hand to selected areas of the human anatomy comprising:

an elastomeric member having a first surface for contacting the hand and a second surface for contacting the anatomy,

said surfaces disposed at opposite ends of the elastomeric member; and



a hollow rigid member having first and second openings, said elastomeric member being disposed within and extending through the rigid member.

4,454,869

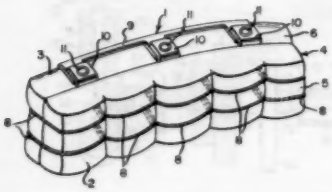
ARTHRITIS RELIEF SUPPORT PAD

William H. Byler, Sarasota, Fla., assignor to William H. Byler Revocable Trust, Sarasota, Fla.

Filed Jul. 28, 1982, Ser. No. 402,608

Int. Cl.³ A61F *5/00*

U.S. Cl. 128—69 **11 Claims**



1. An arthritis relief support pad having length, width and thickness dimensions for placement on the pelvic crest of the pelvis of a user lying on his side on a supporting surface to shift body weight bearing pressure from the trochanter to the pelvis and thereby relieve pressure on the hip joint connecting the pelvis and trochanter, the support pad comprising:

(a) cushion means for cushioning the pelvic crest and for lifting the pelvis relative to the supporting surface a distance sufficient to shift weight bearing pressure normally acting on the trochanter to the pelvis, said cushion having a top surface for placement against the crest of the pelvis and a bottom surface for placement against the supporting surface; and

(b) a dimensionally stable base attached to the bottom surface of the cushion means.

4,454,870

HALO JIG

Edwards P. Schwentker, Hershey, Pa., assignor to Ace Medical Company, Los Angeles, Calif.

Filed Aug. 17, 1982, Ser. No. 408,733

Int. Cl.³ A61F *5/04*; A61H *1/02*

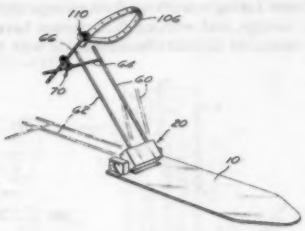
U.S. Cl. 128—75 **3 Claims**

1. A jig for supporting a patient and the patient's head during the installation of a cervical halo comprising the combination of:

a plate adapted to be slipped under the mattress of a litter or operating table, the plate being so constructed and configured as to be held, in use, rigidly in place by the weight of the patient laying on the mattress;

a block assembly securely attached to the plate at the distal end thereof, the proximal end of the plate being adapted to extend under the patient, the block assembly comprising a block pivotally mounted near the distal end of the plate, means for adjusting the angle of the pivotally mounted block with respect to the plate, the pivotally mounted block having formed therein at least a pair of apertures to receive at least a pair of head support rods; and

cervical halo support ring adjusting structure comprising at



least a pair of head support rods adapted to be received in the apertures in the pivotally mounted block, a cross bar, a halo support rod, first means adjustably clamping the cross bar to the halo support rod, and second means for adjustably clamping a cervical halo to the halo support rod.

4,454,871

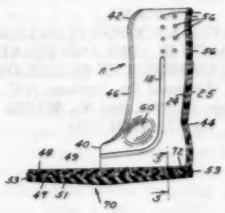
ANKLE-FOOT ORTHOSIS

Irwin Mann, Lake Orion, Mich., and Richard L. Hecker, Milwaukee, Wis., assignors to Med-Con, Inc., Downers Grove, Ill.

Continuation of Ser. No. 191,675, Sep. 29, 1980, abandoned. This application Sep. 21, 1982, Ser. No. 420,744

Int. Cl.³ A61F *5/04*

U.S. Cl. 128—80 H **6 Claims**



1. An easily removable orthosis (**11**) for maintaining an ankle and a foot in a substantially 90° relationship to one another, said orthosis comprising a generally boot shaped structure including a foot portion (**40**) and a leg portion (**42**) disposed in a substantially 90° relationship to one another, said structure being composed of a continuous inner liner of foamed plastic (**24**) surrounded by a continuous outer layer of vacuum formable plastic film (**25**), a protrusion in the ankle joint area, the portions of said outer layer adjacent the medial and lateral surfaces of the ankle joint of a wearer being deformed for defining a pair of opposed exteriorly protruding longitudinal ribs (**18**), (**20**); said protrusion and ribs reinforce the rigidity of said outer layer for inhibiting flexion of the wearer's ankle joint, said boot shaped structure further including a continuous longitudinal opening (**46**) extending adjacent the dorsal surface of the foot and anterior surface of the leg of a wearer for facilitating removal of and entrance into said structure and binding means (**50**) across said opening for snugly fitting said structure to a wearer and having the ability of only partially closing the continuous opening and further having a rigid boot portion (**70**) placed below the foot portion (**40**) so as to cause limitation of motion at ankle and subtalar joints during ambula-

tion of the wearer; wherein said foot portion includes a sole means (51) and the sole means varies in thickness and is biomechanically designed to allow for a forward motion of the leg over the foot so as not to over-extend the knee in propulsion.

4,454,872

TOE PROTECTOR FOR AN ORTHOPEDIC FOOD CAST

Ronald R. Brouhard, 7033 SE. 66th, Portland, Oreg. 97206

Filed Feb. 4, 1983, Ser. No. 444,835
Int. Cl.³ A61F *13/00*
U.S. Cl. 128—82 **5 Claims**

1. A wrap-around toe protector as an addition to an orthopedic cast for the human foot comprising a frame of three parts assembled to be one piece consisting of a main part, the wrap, which is located along the sides and front of said cast in such position as to extend in a horizontal plane from the ankle area on one side of the casted foot, foreward, arcing around the toe area, then rearward, ending at the ankle area on the opposite side of said cast, and two secondary parts, the bows, which arc under said cast wherein both ends of said bows are permanently affixed to said wrap, forming a one-piece unit.

4,454,873

SEPARATOR MEDIUM FOR ORTHOPEDIC CAST MATERIAL

Carol J. Laufenberg, Pleasanton, and Milton F. Custer, Byron, both of Calif., assignors to Hexcel Corporation, San Francisco, Calif.

Filed Feb. 26, 1982, Ser. No. 352,921
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—90 **17 Claims**

1. An assembly for use as an orthopedic cast comprising: a body containing a thermoplastic resin material and being in the form of a sheet wrapped in a roll, said roll adapted to be immersed in hot water to prepare the resin material for wrapping onto a limb or body part of a patient; and a quantity of (poly-)ethylene oxide applied to the body to prevent adherence of adjacent convolutions of the roll.

4,454,874

PLASTER SPLINT OR CAST FOR MEDICAL PURPOSES

Peter L. Monnier, 81 Pocahontas Rd., Redding, Conn. 06896

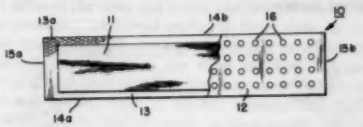
Filed Nov. 22, 1982, Ser. No. 443,296
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—91 R **10 Claims**

1. A blank adapted to be formed into a plaster splint to be placed on a member, such as a person's arm or leg, comprising in combination:

a strip of fabric impregnated with powdered plaster that will absorb and react with water to set into a cohesive, substantially rigid mass,

a first sheet and a second sheet of flexible, non-water-absorptive material enclosing said strip between them with said sheets being joined together along at least their side edges at opposite side edges of said fabric strip,

said first sheet, which forms the outside of a completed splint facing outward of the member on which said splint is



placed, being perforated to enable water to be applied through said perforations to set said plaster, and

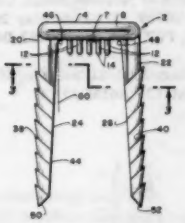
said second sheet, which forms the inward side of a completed splint facing inward toward said member on which said splint is placed, having a plurality of cushion elements thereon.

4,454,875

OSTEAL MEDICAL STAPLE

Clyde R. Pratt, Somis, and Roger G. Carignan, Ventura, both of Calif., assignors to Techmedica, Inc., Camarillo, Calif.

Filed Apr. 15, 1982, Ser. No. 368,622
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—92 B **17 Claims**



1. An osteal medical staple comprising the combination: an integral member having a cross-bar portion of a substantially rectangular configuration with a substantially flat lower surface providing a broad tissue contact area, termini at opposite ends thereof, and lateral protuberances at opposite sides thereof defining gripping means by which said staple may be grasped; a depending leg extending from said lower surface of said cross-bar adjacent each of said termini, the width of each of said legs being less than the distance between lateral protuberances on opposite sides of each cross-bar portion, such that the opposite lateral surfaces of said legs are spaced inwardly from said lateral protuberances, and being flared outwardly from said cross-bar portion; and barbed means on each of said depending legs adapted to inhibit withdrawal movement of said staple once same has been positioned in its fixation environment.

4,454,876

PELVIC FIXATION PLATE AND METHOD OF IMPLANTING SAME

Dana C. Mears, Oakmont, Pa., assignor to University of Pittsburgh, Pittsburgh, Pa.

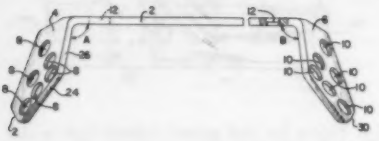
Filed May 25, 1982, Ser. No. 381,703
Int. Cl.³ A61F *5/04*; A61B *17/18*
U.S. Cl. 128—92 D **13 Claims**

1. An implantable pelvic fixation plate comprising an elongated body having a central portion and a pair of iliac

supporting portions disposed on opposed sides of said central portion,

said iliac supporting portions each having at least one fastener receiving opening,

said iliac supporting portions having a greater average transverse width than the average transverse width of said central portion,



said iliac supporting portions and said central portion each being generally plate-like,

said iliac supporting portions projecting downwardly and outwardly with respect to said central portion, and

a plane passing through said central portion forms a larger included angle of about 100 to 140 degrees with respect to each said iliac supporting portion.

4,454,877

PORTABLE NEBULIZER OR MIST PRODUCING DEVICE

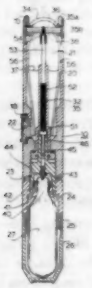
Jack V. Miller, Sierra Madre, and Stephen T. Blosser, San Gabriel, both of Calif., assignors to Andrew Boettner and Mrs. Andrew Boettner, both of Newport Beach, Calif.

PCT No. PCT/US81/00709, 371 Date May 26, 1981, 102(e) Date May 26, 1981, PCT Pub. No. WO82/04193, PCT Pub. Date Dec. 9, 1982

PCT Filed May 26, 1981, Ser. No. 287,544

Int. Cl.³ A61M *15/00*

U.S. Cl. 128—200.21 **24 Claims**



11. A nebulizer comprising:

an elongated body including a nebulized fluid emission opening at one end thereof;

a nebulizer fluid reservoir therein communicating with said opening;

a fluid retainer adjacent to said opening;

a source of gas pressure within said body positioned remote from said opening; and

means conveying gas pressure from said source of gas pressure through the region of said fluid retainer;

said gas pressure conveying means including a perforate section extending into the region of said retainer;

whereby gas traversing said conveying means aspirates nebulizer fluid during passage through said fluid retainer;

wherein said perforated conveying means comprises a closely spaced helix.

4,454,878

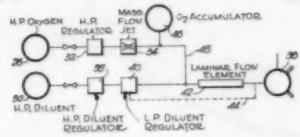
OXYGEN ACCUMULATOR FOR CONSTANT PARTIAL PRESSURE SEMI-CLOSED BREATHING APPARATUS

James D. Morrison, North Vancouver, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

Filed Jan. 26, 1982, Ser. No. 342,884

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—201.27 **4 Claims**



1. Semi-closed circuit breathing apparatus comprising: a counterlung; an oxygen source; means for feeding oxygen from the oxygen source to an oxygen regulator and then to a mass flow jet; an inert gas source; means for feeding inert gas from the inert gas source to an inert gas regulator and then to an inert gas low pressure diluent regulator; a laminar flow element; first conduit means connected between said diluent regulator and said laminar flow element; second conduit means connected between said mass flow jet and said first conduit means; third conduit means connected between said laminar flow element and said counterlung; a pressure feed-back loop from said counterlung to said diluent regulator; oxygen accumulator means for accumulating a portion of the oxygen delivered by said mass flow jet during descent, to be retained therein at a constant depth, and for discharging the retained oxygen into said second conduit means during ascent so as to counteract oxygen partial pressure transients during descent and ascent; and means directly connecting said accumulator means to said second conduit means.

4,454,879

ANESTHETIC DELIVERY SYSTEM

Laurence I. Peterson, Doylestown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 597,810, Jul. 21, 1974, Pat. No. 4,015,599. This application Apr. 4, 1977, Ser. No. 784,303

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—204.13 **3 Claims**

1. A composition capable of releasing an anesthetic gas at a controllable, substantially constant concentration comprising a solid, macroreticular polymeric adsorbent bed of particles or beads having adsorbed thereon a volatile anesthetic liquid to be vaporized as an inhalation anesthetic.

4,454,880

NASAL HOOD WITH OPEN-BOTTOM MIXING CHAMBER

Rudolph Muto, 24 Williams St., Andover, Mass. 01810, and Ronald Cotner, Box 96 R.F.D. No. 2, Chester, N.H. 03036

Filed May 12, 1982, Ser. No. 377,340

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—205.25 **5 Claims**

1. A nasal hood for administrating oxygen to a patient, said hood comprising:

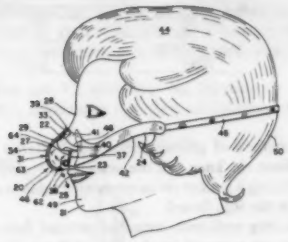
a shell of soft, flexible imperforate material shaped to fit over and cover the nose of a patient while leaving the patient's mouth free to eat, drink, or breath;

said shell having a top wall, opposite side walls, a front wall, a rear opening, to accommodate the nose of the patient, and a bottom opening for exhalation of air, said front wall having a lower edge slightly inturned and said shell forming an open bottom dome adapted to project outwardly,

above the level of the mouth of said patient, to form a mixing chamber;

the side walls of said shell having integral wings, each adapted to extend along the cheek bones of said patient for fixation by a band around the back of the head of patient;

and an oxygen supply tube, connectable to a source of oxygen, and extending along one of said wings, through said sidewall of said shell and into the mixing chamber of said dome, and positioned to be under the nostrils, and along the upper lip of the patient said tube having discharge nozzles directed only upwardly and outwardly away from



the nose and mouth of the patient toward the front wall of said shell and adapted to create vortical circulation of incoming oxygen within said chamber;

said shell including a narrow strap connected to said opposite sidewalls and extending from one side wall to the other, across said rear opening so as to extend along the upper lip of the patient for additional firm fixation of said hood;

whereby said oxygen is mixed with moist air exhaled by said patient and some of said moist oxygen may be inhaled through the mouth of said patient.

4,454,881

MULTI-LAYER FACE MASK WITH MOLDED EDGE BEAD

Otto L. Huber, Beverly Hills, and Mark Magidson, Los Angeles, both of Calif., assignors to Moldex/Metric Products, Inc., Culver City, Calif.

Filed Aug. 21, 1981, Ser. No. 294,834
Int. Cl.³ A62B 7/10
U.S. Cl. 128—206.15 **9 Claims**

1. A face mask to be worn upon the face of a wearer and for providing filtering of particular impurities in the air, including

at least one layer of flexible material molded generally to conform to the contours of the face of the wearer including the areas of the sides of the nose, the bridge of the nose and upper cheekbones and forming a flexible support carrier for filter material and with the at least one layer of flexible material allowing the passage of air through the one layer,

a separate layer of filter material supported by the at least one layer of flexible material and with the filter material filtering out the particular impurities in the air,

a molded, rubber-like bead member molded to and extending around the peripheral edges of the at least one layer of flexible material and the separate layer of filter material forming the face mask and with the molded rubber-like bead member providing an edge seal between the face mask and the face of the wearer, and

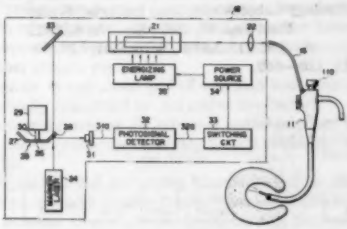
the bead member including membrane portions extending inwardly to the interior of the mask from the bead member and with the membrane portion at least in the areas of the sides of the nose and upper cheekbones of the wearer for providing additional sealing in those areas, an exhalation port extending through the layers adjacent the peripheral edges thereof, the bead member including an integrally molded portion extending over and molded to the at least one layer of flexible material and over said exhalation port, said integrally molded portion defining an integrally molded exhalation valve seat adapted to cooperate with an exhalation value member.

4,454,882

LASER APPARATUS UTILIZING MARKING LASER FOR TRIGGERING OPERATIVE LASER

Akira Takano, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 19, 1982, Ser. No. 399,811
Claims priority, application Japan, Jul. 29, 1981, 56-118681
Int. Cl.³ A61N 3/00
U.S. Cl. 128—395 **9 Claims**



1. A laser apparatus comprising:

an operating laser oscillator for generating an operating laser beam;

a marker laser oscillator for generating a visible marker laser beam;

means for guiding the visible marker laser beam coaxially with the operating laser beam to a laser probe of an endoscope;

chopping means for shielding and reflecting the visible marker laser beam from said marker laser oscillator in a predetermined direction at a predetermined frequency;

marker laser beam detecting means for detecting the visible marker laser beam shielded and reflected by said chopping means and for generating a detection signal; and

energizing means for driving said operating laser oscillator in response to the detection signal from said marker laser beam detecting means.

4,454,883

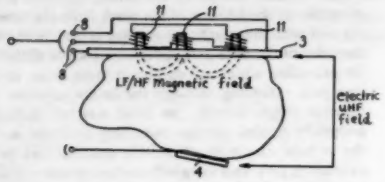
ELECTROTHERAPEUTIC APPARATUS

Victor M. Fellus, Meudon, France, assignor to Therafield Holdings Limited, Isle of Man

Filed Feb. 16, 1982, Ser. No. 348,888
Int. Cl.³ A61N 1/40
U.S. Cl. 128—422 **21 Claims**

1. Electrotherapeutic apparatus comprising means for generating and applying to a patient's body a pulsed high frequency electrical field, means for generating and applying to the patient a pulsed magnetic field independent from the electrical field, and means for coordinating the pulses of the magnetic

field with the pulses of the electrical field, whereby the pulses of the magnetic and electrical fields can be applied in a predetermined relationship to provide enhanced antispasmodic and analgesic effects and maximize healing effect.

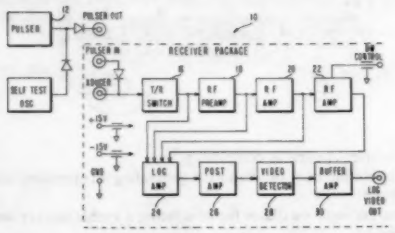


4,454,884

WIDE DYNAMIC RANGE ULTRASOUND ECHO RECEIVER

Leonard D. Seader, Maple Valley, Wash., assignor to Advanced Technology Laboratories, Inc., Bellevue, Wash.

Filed Sep. 27, 1982, Ser. No. 423,922
Int. Cl.³ A61B *10/00*; G01N *29/00*
U.S. Cl. 128—660 **4 Claims**



1. A wide dynamic range ultrasound echo receiver comprising:

(a) a first linear amplifier having an input and an output:

(b) a multi-stage logarithmic amplifier having a first input associated with a first stage and at least one subsequent input associated with at least a second stage, said multi-stage logarithmic amplifier having a single output, whereby each stage has a gain such that the output of said stage is proportional to the logarithm of the input voltage to said stage and the output of said multi-stage logarithmic amplifier corresponds to the sum of the logarithms of the input voltages to the various stages;

(c) means for introducing a voltage signal representative of a received ultrasound echo into the input of said first linear amplifier and into said first input associated with said first stage of said multi-stage logarithmic amplifier;

(d) means for introducing the output of said first linear amplifier into said subsequent input of said second stage of said multi-stage logarithmic amplifier; and

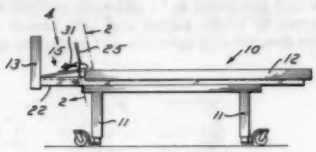
(e) means for generating and adding a sawtooth voltage signal to the output signal of said multi-stage logarithmic amplifier, whereby the composite signal thus formed will be representative of the subject matter being scanned by said received ultrasound echo.

4,454,885

ASSESSING ARTERIAL SYSTEMS

Daniel J. Reddy, Detroit, Mich., assignor to Henry Ford Hospital, Detroit, Mich.

Filed Jun. 22, 1981, Ser. No. 275,854
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—707 **2 Claims**



1. A method of assessing peripheral arterial systems in the leg between the knee and the ankle comprising

positioning a patient on an examining table in supine position with the legs flexed,

positioning resiliently mounted pivoted foot pedals so that they are engaged by the feet of the patient when in the supine position with the legs flexed,

causing the patient to successively depress and release successive left and right foot pedals,

continuing said depressing and releasing for a predetermined time or until claudication occurs,

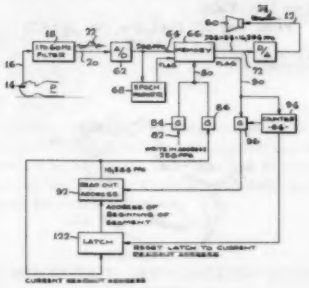
and thereafter immediately making systolic pressure measurements on the legs of the patient between the knee and the ankle while the patient is in supine position on the examining table.

4,454,886

EEG WITH AUDIO OUTPUT

Arnold S. J. Lee, 1033 Hilts Ave., Los Angeles, Calif. 90024

Filed Sep. 14, 1981, Ser. No. 301,934
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—732 **11 Claims**



1. A method for generating a sound output signal representing a brainwave comprising:

establishing a first signal representing a brainwave;

selecting a multiplicity of sequential brainwave segments of said first signal, each brainwave segment lasting for a particular duration; and

generating a sound output signal comprising a series of output segment signals, each output segment signal comprising a plurality of replica signals in sequence wherein each replica signal has a duration which is a fraction of the duration of a corresponding segment of the first signal, and wherein each replica signal is a waveform which is

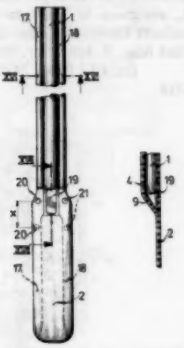
substantially geometrically similar to the waveform of the corresponding segment of the first signal.

4,454,887

MEDICAL INSTRUMENTS FOR INTRODUCTION INTO THE RESPIRATORY TRACT OF A PATIENT

Christian Krüger, Curtiusstrasse 4, 2400 Lübeck, Fed. Rep. of Germany

Filed Apr. 12, 1982, Ser. No. 367,408
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1981, 3115192
Int. Cl.³ A61M 25/00
U.S. Cl. 128—772 3 Claims



1. A medical instrument for insertion into the respiratory tract of a patient, comprising:

a flexible tube which is morphologically stable in cross-section, and having a distal extension formed of a flat strip,

said flexible tube being insertable by means of said extension through the mouth and pharynx cavities of the patient up to and into the oesophagus thereof,

said flexible tube having an opening closable by means of a tongue located on said flexible tube, said opening of said flexible tube being located above said extension and, on insertion of the instrument, said opening is laterally alignable with the larynx of the patient, whereby secretions may be extracted from, and curative agents, internal tubes, guiding elements, probes, endoscopes and catheters are insertable into the respiratory tract of the patient via said flexible tube opening,

said flexible tube further including a sloping baffle or partition, extending in the area of said flexible tube opening from the rearward wall area of said flexible tube slopingly downwards towards the front thereof, and establishing an even transition to the lower distal terminal portion of said flexible tube opening, so that a catheter, an internal tube, a guiding element, and an endoscope, which are insertable as the proximal extremity into said flexible tube, can be inserted into the patient's respiratory tract along said baffle or partition, and

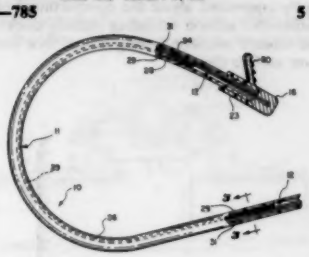
two air or venting tubes, which are open at the proximal side thereof, joined to said flexible tube and extending parallel thereto, each of said two air or venting tubes having a distal opening adjacent to said opening of said flexible tube, said extension having a width that is substantially equal to the width of the structure comprising the flexible tube and the two air or venting tubes.

4,454,888

CARDIAC PACING LEAD WITH CURVE RETAINER

Philip Gold, Pompano Beach, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Oct. 7, 1981, Ser. No. 309,251
Int. Cl.³ A61N 1/00
U.S. Cl. 128—785 5 Claims



1. A pacing lead assembly which comprises:

a pacing lead body having a distal end and a proximal end;

an elongate, flexible electrical conductor extending substantially the entire length of said lead body, said conductor being in the form of a coiled conductor having the shape of a coil spring to define a stylet receiving lumen within said coiled conductor and extending throughout the length of said lead body, sid coiled conductor having in the curved configuration an outer arcuate periphery and an inner arcuate periphery;

an electrode at said distal end of said lead body and being electrically connected to said coiled conductor;

a connector terminal at the proximal end of said lead body, said coiled conductor extending to said connector terminal;

an elongate, curved flat spring member which is situated within said lead body distal end portion and which has one end attached to said coiled conductor at a first position near said electrode and the other end attached to said coiled conductor at a second position remote from said first position to thereby cause said coiled conductor to take the form of the curved configuration of said spring member between said first and second positions within said distal end portion near the distal end of said lead body;

said lead body including an insulating sheat encapsulating both said flat spring member and said coiled conductor over the entire length of the flat spring and substantially the entire length of said coiled conductor, said spring member having a pre-set generally semi-circular configuration to thereby cause said lead body and coiled conductor therein to take the form of said semi-circular configuration, and said coiled conductor lumen being capable of receiving a stylet inserted therein for straightening the portion of said lead body having said spring member therein for insertion of said lead body in a generally straight configuration into a heart chamber after which the stylet can be removed to allow said spring member to reassume said semi-circular configuration to cause said distal end portion of said lead body to reassume the curved generally semi-circular configuration in a heart chamber.

4,454,889

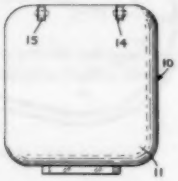
COMPACT WITH AIR TIGHT CLOSURE

Joseph P. Contreras, Sr., Brockden Dr., Mendam, N.J. 07945

Filed Sep. 21, 1983, Ser. No. 534,161
Int. Cl.³ A45D 33/00
U.S. Cl. 132—82 R 12 Claims

1. A compact having an air tight closure comprising,

a. base assembly means defining a compartment for moisture laden material,
b. closure means operatively connected to said base assembly and movable from open to closed position and vice versa relative the same,
c. said base assembly means including, a leaf spring means fixedly connected about the compartment and having a cantilevered section extending radially outward,
d. said closure member having, a seal face formed on the lower surface thereof,



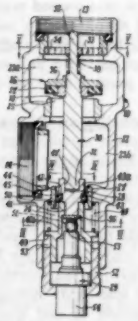
e. said seal face operative on closing movement of the closure member to engage the peripheral end of the cantilevered section to deform the cantilevered section whereby an air tight seal is formed when the closure member moves to the closed position, and
f. latch means for holding the closure member in engagement with the base assembly operable to release the closure member on opening movement thereof.

4,454,890

SOLAR HEATER SYSTEM AND VALVE

Marcus F. Schoenheimer, Indooroopilly; Lionel A. Gaskell, Bracken Ridge, and Keith A. Ackermann, Lawnton, all of Australia, assignors to Actrol Industries Pty. Ltd., Australia

Filed Aug. 25, 1981, Ser. No. 296,174
Claims priority, application Australia, Aug. 28, 1980, PE5309
Int. Cl.³ E03B *7/10*
U.S. Cl. 137—62 **12 Claims**



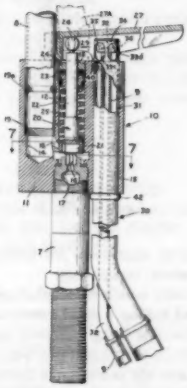
1. A combination valve including, a hollow body, a chamber formed within said body, said chamber having an inlet section and an outlet section, an orifice within said body through which said inlet and outlet sections communicate, an inlet port and an outlet port formed in said body and connecting with said inlet and outlet sections respectively, a primary valve member mounted within said body for relative movement and being operable to close and open said orifice to respectively prevent and allow communication between said inlet and outlet sections, a drain port in said body and adapted for communication with one of said chamber sections, a secondary valve member mounted within said body for movement relative to both said body and said primary valve member and being operable to adopt either a closed or an open position at which it prevents and allows respectively said communication between the drain port and said one primary chamber section, a temperature responsive element connected to said body and to at least one said valve member and being operable to control the opening and closing movement of both said valve members, the arrangement being such that said primary valve member moves towards the closed position with falling temperature and closes said orifice at a first predetermined temperature and said secondary valve member allows said communication with said drain port at a second predetermined temperature which is lower than said first predetermined temperature, and part of said temperature responsive element is exposed to atmosphere external of said body so that said element operates solely as a consequence of direct response to ambient or radiation temperature.

4,454,891

AIR GAP DRAIN MODULE FOR USE IN A REVERSE OSMOSIS SYSTEM

Richard C. Dreibelbis, FairLawn, and Richard J. Smith, Wayne, both of N.J., assignors to Emerson Electric Co. (H & H Precision Products Division), Cedar Grove, N.J.

Filed Mar. 9, 1982, Ser. No. 356,389
Int. Cl.³ F16K *24/00*
U.S. Cl. 137—216 **9 Claims**



1. An air gap drain module for a reverse osmosis potable water system comprising:
a. main body having a control valve bore and a dispensing spout bore, and an auxiliary bore extending end to end therethrough;
b. A waste water tube connected at one end to said reverse osmosis system and having an opposite upper end,
c. a drain tube having an end connected concentric in surrounding relation to at least a portion of the opposite upper end of said waste water tube, and said drain tube including an opposite end remote from the concentric end thereof and communicating with waste disposal means,
d. an end closure connected to the concentric end of said drain tube,
e. means on said end closure for directing waste water issuing from said waste water tube to drain through said drain tube to the waste disposal means, said means on said end closure including a first portion positioned above and centrally with respect to the opposite upper end of said waste water tube for changing the direction of flow of waste water issuing from said waste water tube and directing said waste water issuing from said waste water tube to drain through said drain tube to said waste disposal means, and

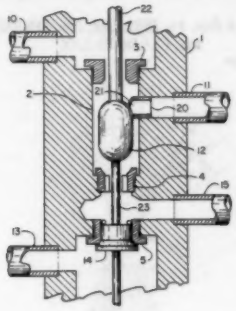
f. means for inhibiting flow of waste water from said drain tube to said waste water tube by providing an air chamber between said opposite upper end of said waste water tube and said first portion, said means for inhibiting including sized slot means in the concentric end of said drain tube which forms an air gap for said air gap drain module.

4,454,892

ATOMIZING OIL VALVE IMPROVEMENT

Roman Chadshay, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 13, 1982, Ser. No. 417,011
Int. Cl.³ F16K *11/16*
U.S. Cl. 137—597 **4 Claims**



1. An atomizing oil valve, including,
a valve body,
a cavity within the valve body,
a vapor inlet to the cavity,
a vapor outlet from the cavity,
a seat within the cavity between the vapor inlet and vapor outlet,
a first valve element movable into and out of engagement with the vapor seat,
an oil inlet to the cavity,
an oil outlet from the vavle cavity,
a seat within the cavity between the oil inlet and oil outlet,
a second valve element movable into and out of engagement with the oil seat,
a stem system arranged to extend into the valve cavity and move both valve elements relative to their respective seats,
and an extension structure from the vapor outlet conduit arranged within the cavity to cooperate with the vapor valve element to form a passage from the cavity into the vapor outlet conduit predetermined in size to restrict the flow of vapor from the cavity into the vapor outlet conduit so that a predetermined quantity of vapor will be forced from the cavity out through the oil outlet conduit when the oil valve element is seated.

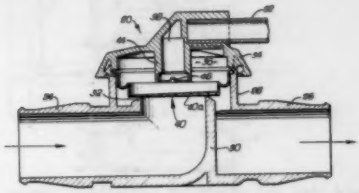
4,454,893

LOW-NOISE DIAPHRAGM FOR USE IN EXHALATION VALVE

Rolf O. Orchard, Manhattan Beach, Calif., assignor to Puritan-Bennett Corp., Los Angeles, Calif.

Filed Nov. 30, 1981, Ser. No. 326,127
Int. Cl.³ F16K *31/12, 31/145;* A61M *16/00*
U.S. Cl. 137—494 **5 Claims**

1. An exhalation valve assembly for controlling exhalation in a respirator, said valve assembly comprising:
a valve housing defining a closed chamber;
a diaphragm supported in and extending across said housing and forming a control pressure chamber on one side of said diaphragm and an outlet pressure chamber on the other side of said diaphragm;
a control pressure passage in fluid communication with said control pressure chamber;
an outlet passage in fluid communication with said outlet pressure chamber;
an inlet passage terminating in a valve seat within said outlet pressure chamber and in an operative relationship with



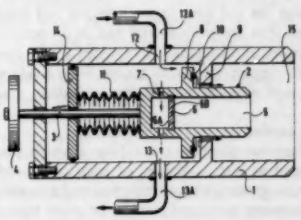
said diaphragm, whereby the pressure in said control pressure chamber can be used to control the inlet pressure needed to unseat said diaphragm and place said inlet and outlet passages in fluid communication;
wherein said diaphragm is tapered in thickness from one edge to another and becomes only partially unseated in low flow conditions, by flexing of said diaphragm at a region of thin cross section.

4,454,894

GAS BLEED COCK

Jacques Tallon, Annecy, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Oct. 23, 1981, Ser. No. 314,338
Claims priority, application France, Oct. 24, 1980, 80 22775
Int. Cl.³ G01N *1/24*
U.S. Cl. 137—599 **5 Claims**



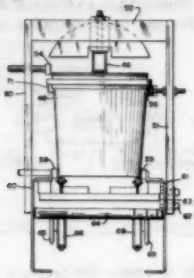
1. A cock for low-pressure bleeding of a gas from a gaseous mixture, said cock having a body with an inlet and a pumping outlet for the mixture and a bleed outlet orifice, and a valve operatively mounted within the valve body and being situated between said orifice and the inlet, said valve includes a semi-permeable membrane with a first surface in communication with said inlet and a second surface in communication with said bleed orifice, and means for positioning the valve in a first position to allow the mixture to pass directly from the inlet towards the bleed orifice when the pressure of the mixture is lower than a given pressure, and a second position for closing the bleed orifice when the pressure of the mixture is higher than said given pressure, such that the gas to be bled off then passes through said semi-permeable membrane.

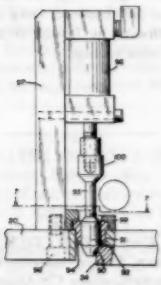
4,454,895

BAIL ATTACHING APPARATUS

Raymond A. Heisler, 657 Dakota Trail, Franklin Lakes, N.J. 07417

Filed Apr. 22, 1982, Ser. No. 370,729
Int. Cl.³ B21F *45/00*
U.S. Cl. 140—93 B **23 Claims**





1. Bail applying mechanism for transporting wire from a supply source into said mechanism and cutting this wire into a determined length and then between upper and lower die members bending the cut wire into a selected bail shape in a single plane and then applying a wire bail to a container and having two opposed ears attached to the sides of said container with each ear having an outer wall spaced from a side wall of said container, said applying mechanism including: a support means;

a main plate carried by said support means;

a pair of curling dies pivotally carried by said main plate, the dies arranged as mirror images of each other and with each having a groove with an entering and an exiting end and therebetween a curved portion of more than ninety degrees, said die and its formed groove adapted to receive an end of a wire bail and as the wire end is moved through said curling die the wire is bent into a loop with the loop end of said wire bail exiting at a determined position and then

entering said ear so that the end of the bail penetrates this outer wall of the ear and then continues to curve within the interior of the ear so as to provide a retaining loop end;

cam means engaging said curling die for pivotiing said curling die to a position adjacent the ear prior to moving the wire into and through said curling die a cover member on said plate;

means on said plate connected to said cover member for actuating said cover member so as to provide a confining wall for the groove in said curling die as the wire end is being moved in said groove and to uncover said groove after the wire end has been formed and inserted into an ear;

means on said support for transporting successive containers on their bottoms to and through the bail applying mechanism, and

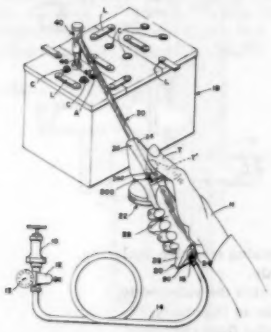
said means for transporting includes means for rotating each container until an ear of the container is brought into a desired orientation at which orientated position the container is advanced to a delivery position whereat the container is delivered to the bail applying mechanism.

4,454,896

AUTOMATIC BATTERY WATER FILLER

James H. Barrett, Jr., 5055 Golf Creek Rd., Sylvania, Ohio 43560, and Carl Schultz, 7117 N. County Rd. 33, Tiffin, Ohio 44883

Filed Sep. 14, 1982, Ser. No. 418,082
Int. Cl.³ B67D *5/00*
U.S. Cl. 141—209 **17 Claims**



1. In an automatic liquid shut-off dispensing device having a handle housing containing a normally closed valve and an operating mechanism for opening said valve, a liquid supply having a given pressure range connected by a flexible duct to said valve, and a suction-creating nozzle rigidly connected to said handle housing, the improvements in said operating mechanism comprising:

(1) a double toggle means composed of three alignable pivotally connected links, one end of said toggle means being pivoted to a stationary pivot in said housing, and the other end of said toggle means being pivotally connected to said valve for opening said valve when said toggle links are aligned,

(2) a manual plunger means projectable from said housing, said plunger means operable for aligning said links to open said valve and having two relatively movable parts, one lockable in aligning position and pivotally connected to one of the pivots interconnecting said pivotally connected links, and the other part for aligning the middle one of said links, and

(3) a suction-operated lever means movable against the other of the pivots interconnecting said pivotally connected links for breaking the alignment of said links to permit closing of said valve and moving said other plunger part.

4,454,897

KETCHUP BOTTLE SUPPORT

Dimitri Valiant, 1729 Bayview Dr., Erie, Pa. 16505

Filed Sep. 27, 1982, Ser. No. 423,614
Int. Cl.³ B67C *9/00*
U.S. Cl. 141—364 **5 Claims**

1. A ketchup bottle holder to support one ketchup bottle on another,

a flat sheet adapted to be formed to be supported on a first bottle on a counter top or the like,

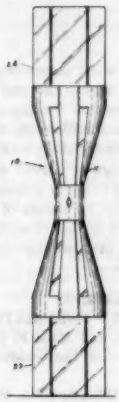
said first bottle having a major circumference and having a neck having a length and a minor circumference and a second bottle having a major circumference and having a neck with a length and minor circumference inverted above the first bottle in mouth to mouth relation with each other,

comprising a generally flat rectangular sheet having two generally parallel sides a first end and a second end,

an intermediate part between the ends of a length approximately equal to the major circumference of said bottles,

laterally extending slots in said rectangular sheet,

said slots being generally diamond shaped having a width sufficiently great that the sum of the widths of said slots is



greater than the difference between the circumference of the neck of each of said bottles and the major circumference of said bottles and a band attached to the intermediate part of said sheet,

said band having a distal end and a first end and a length approximately equal to the minor circumference of the necks of said bottles and a width approximately equal to the width of said bottle necks and means for attaching the distal end of said band to said first end of said band whereby the band can be wrapped around said sheet holding said sheet in the general shape of an hour glass for receiving one said bottle in the lower end thereof and the other said bottle inverted in the upper end thereof whereby the contents of the upper bottle will flow into the lower bottle.

4,454,898

ROUTER BRACKET

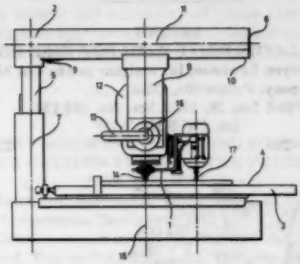
Anthony J. Pavnica, 1813 Briarcliff Dr., New Lenox, Ill. 60451

Filed Apr. 18, 1983, Ser. No. 486,139

Int. Cl.³ B27C 9/00

U.S. Cl. 144—1 F **11 Claims**

1. A tool mounting bracket for mounting a first tool to a device having adjusting and positioning mechanisms, comprising connecting means to connect said tool mounting bracket to said device, said connecting means including a first plate member, a second plate member extending angularly from said first plate member, first plate securing means to rigidly secure said first plate member to said device, said tool mounting bracket including an adjustable abutting member positioned in operating relationship with said second plate member, operating means to move said abutting member into tightened abutting relationship against said device, wherein said operating means includes a rotatable screw assembly positioned between said second plate member and said abutting member to move said



abutting member toward said device and into tight bearing relationship thereagainst.

4,454,899

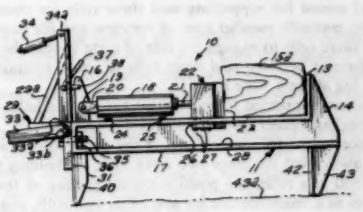
FIREWOOD LOG SPLITTING ATTACHMENT FOR TRACTORS

Charles D. Myers, Jr., 17375 Oakdale Rd., Dallas, Oreg. 97338

Filed Apr. 14, 1983, Ser. No. 485,007

Int. Cl.³ B27L 7/00

U.S. Cl. 144—193 A **1 Claim**



1. A firewood log splitting attachment for tractors, comprising, in combination, a general horizontal, elongated frame pivotable about its longitudinal axis on a bolt projecting from one end of said frame, said bolt being supported on a three point hitch assembly mounted on a tractor, an upward leg and a downward leg fixably mounted on said one end of said frame, an upward plate and a downward plate rigidly affixed on an opposite end of said frame, one of said plates serving as yet another leg while the other plate serves as a log-abutting stop, a hydraulic cylinder mounted on one of said legs, a splitting wedge on an end of a piston rod of said hydraulic cylinder, guide means carried by said splitting wedge for sliding support along said frame in order to split a firewood log positioned between said wedge and said stop which is aligned with said wedge; said three point hitch assembly comprising a pair of side arms and a central, upward turnbuckled stabilizer extending from said tractor, a horizontal transverse bar having a pair of upward, spaced-apart angle irons mounted thereupon, said arms pivotally supporting opposite ends of said transverse bar while said stabilizer is pivotally attached between the upper ends of said angle irons, said transverse bar supporting said bolt; and a latch securing said frame in selected pivoted position on said bolt, said latch comprising a cross-pin pivotally supported between said angle irons, a radially extending handle affixed to one end of said cross-pin and a radially extending tongue affixed on said cross-pin and being located between said angle irons for locking either of said legs between said handle and said tongue when said frame is pivoted on said bolt so that said wedge and said stop are on an underside of said frame for spliting heavy logs resting on the ground, or else being on an

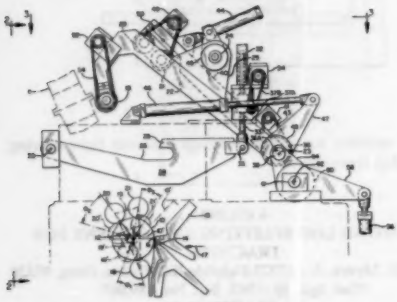
upper side of said frame for splitting a lightweight log chunk placed upon said frame.

4,454,900

VENEER LATHE DRIVE WITH POWERED ROLLS

Leonard L. Hayes, Lewiston, Id., assignor to The Coe Manufacturing Company, Painesville, Ohio

Filed Jun. 28, 1982, Ser. No. 393,130
Int. Cl.³ B27L *5/02*
U.S. Cl. 144—213 **23 Claims**



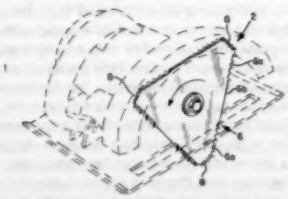
1. Veneer lathe apparatus, comprising:
three drive rolls at least one of which is powered;
support means for supporting said three rolls for rotation about mutually parallel axes of rotation and for causing said three rolls to engage the side of a log so that the log is clamped between said three rolls to cause rotation of said log about a lathe axis;
knife means supported for movement toward the lathe axis for peeling veneer from the log as it is rotated; and
reference means for moving one of the drive rolls toward and away from the other two drive rolls, for holding said one roll in a reference position during peeling so that it serves as a reference roll for said other two rolls, and for automatically adjusting said reference position of the reference drive roll in response to changes in the position of said knife means during peeling to maintain said reference drive roll in contact with said log.

4,454,901

MULTI-DIRECTIONAL ROTARY SAW

Wilfred Thorsness, 5518 N. Market, Spokane, Wash. 99207

Continuation-in-part of Ser. No. 954,651, Apr. 2, 1979, abandoned. This application Aug. 8, 1980, Ser. No. 176,481
Int. Cl.³ B27G *13/00*
U.S. Cl. 144—218 **7 Claims**



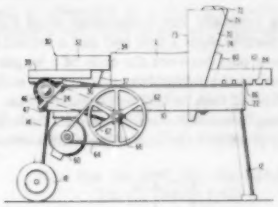
1. A multi-directional rotary saw blade comprising a planar substantially equilateral triangular shaped member having means therein for mounting said blade to a rotary drive source, said member having toothed truncated end portions defined by a straight line cut across each of the ends of said member; each of the three sides of said member having a plurality of saw teeth disposed thereon.

4,454,902

METHOD AND APPARATUS FOR SPLITTING LOGS

Nelson N. Larger, 425 Somerset Ave., Salisbury, Md. 21801

Filed Apr. 22, 1982, Ser. No. 370,995
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—366 **14 Claims**



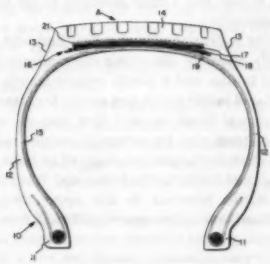
1. A method of splitting a log comprising the steps of progressively moving a wedge against one end of the log to force the other end of the log against a reciprocating wedge-like cutting head until the log has sufficiently advanced on to the cutting head and is split thereby along its longitudinal dimension, and wherein the wedge is moved downwardly while engaging the end of said log to apply pressure thereto, retracting said log from the wedge by means of said cutting head allowing the wedge to move further downwardly to reengage the end of the log to apply pressure thereto.

4,454,903

MULTI-PLY BELT PNEUMATIC TIRE

Daniel R. F. Noël, Heinsch, and Alain F. Florence, Bastogne, both of Belgium, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 12, 1983, Ser. No. 493,891
Int. Cl.³ B60C *9/20, 13/00*
U.S. Cl. 152—361 DM **7 Claims**



1. A pneumatic tire having a multi-ply circumferential reinforcing belt of non-metallic cord reinforced plies, and a steel cord reinforced ply radially outwardly of the non-metallic cord plies and which is of at least the same axial width as the radially outer-most ply of the reinforcing belt.

4,454,904

STRIP CURTAIN FOR DISPLAY CASES

Jack Oxman, Newport Beach, Calif., assignor to Johnston Environmental Corporation, Santa Ana, Calif.

Filed Jun. 7, 1982, Ser. No. 385,924
Int. Cl.³ A47H *23/05, 1/00*
U.S. Cl. 160—332 **5 Claims**

1. A strip curtain for use over the opening of a display case, said strip curtain comprising:
an elongated upper mounting member;

first means for releasably mounting the upper mounting member on supporting structure;

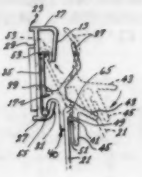
a plurality of elongated flexible strips, each of said strips having longitudinal edges;

means for mounting the strips on the upper mounting member;

a lower mounting member;

means for attaching the strips adjacent the lower ends thereof to the lower mounting member;

said upper mounting member including a support section and an engaging section, said sections being configured and arranged such that said upper mounting member can



be demounted from the first means and hung on a similar mounting member by placing the engaging section of the upper mounting member in contact with the support section of said similar mounting member; and

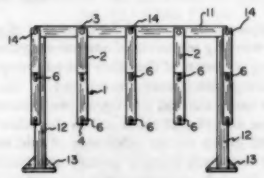
said upper mounting member including a base, a web projecting outwardly from said base, said support section projecting generally upwardly from said web, a hanger section depending from said web and including an elongated groove, said engaging section including portions of said base, web and hanger sections which cooperate to define a downwardly opening groove and said strips include enlargements adjacent their upper ends adapted to be received within said groove of said hanger section.

4,454,905

SHIELD WALL HANGER

Michael D. Banko, Jr., 1917 Moravia St. Ext., New Castle, Pa. 16101

Filed Jul. 15, 1981, Ser. No. 283,601
Int. Cl.³ A47G *5/00*
U.S. Cl. 160—351 **11 Claims**



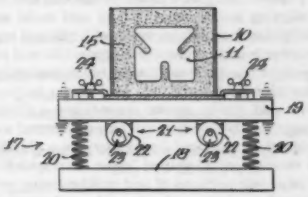
1. A continuous shield wall for use in surrounding radioactive equipment and radioactive materials to prevent the escape of radiation therefrom, said shield wall consisting of an elongated upper support member adapted to be suspended from a building structure, means on said upper support member for supporting a plurality of spaced rows of depending hangers, a plurality of spaced rows of depending hangers extending downwardly from said elongated upper support member, each of said hangers having an elongated base portion with opposed substantially parallel uniplanar smooth surfaces, said base portion having a first end and a second end, at least one hole extending through said base portion adjacent to said first end and at least one elongated pin extending outwardly from one of said uniplanar surfaces of said elongated base portion adjacent to said second end, said elongated pin having a substantially linear axis throughout its length and having a continuous substantially smooth surface, each row of depending hangers consisting of a plurality of hangers having their ends attached by inserting an elongated pin at the lower end of a depending hanger through a hole at the upper end of the next lower depending hanger and a plurality of panels removably supported on said hangers with all adjacent vertical and horizontal edges of said panels overlapping to form said continuous shield wall.

4,454,906

VIBRATORY METHOD FOR PACKING FOUNDRY SAND INTO A PATTERN PRIOR TO THE POURING OF MOLTEN METAL

Albert Musschoot, Barrington, Ill., assignor to General Kinematics Corporation, Barrington, Ill.

Continuation-in-part of Ser. No. 212,988, Dec. 4, 1980, abandoned. This application Sep. 29, 1982, Ser. No. 428,286
Int. Cl.³ B22C *7/02, 15/10*
U.S. Cl. 164—34 **5 Claims**



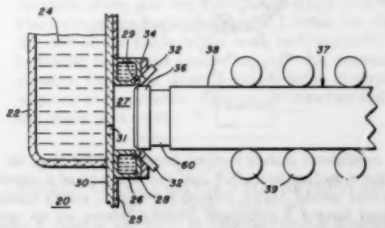
1. In a casting process the method which comprises introducing foundry sand into a mold flask containing a pattern, then subjecting the mold flask to vibratory movement at a frequency and stroke to produce accelerations on the mold flask and contents thereof in excess of the acceleration due to gravity to cause the sand to fill all openings in the pattern, and then subjecting the mold flask to vibratory movement at a frequency and stroke to produce accelerations on the mold flask and contents thereof less than the acceleration due to gravity to pack the sand in place.

4,454,907

CONTINUOUS CASTING MOLD-STARTING PLUG ALIGNMENT SYSTEM

Leonard J. Flowers, Oakmont, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 2, 1981, Ser. No. 326,604
Int. Cl.³ B22D *11/08*
U.S. Cl. 164—425 **15 Claims**



1. In combination with horizontal direct continuous casting apparatus including an open-ended mold assembly having a horizontal longitudinal mold axis, and a mold closure means adapted to be inserted into the exit end of said mold for initiation of casting, an improved alignment system comprising:

(a) a plurality of guide means positionable at intervals along

the periphery of said mold outlet and having surfaces extending inwardly with respect to the inside mold continuous casting surface for contact with said mold closure means and adapted to guide said mold closure means within the exit end of said mold and laterally to the mold axis;

(b) said mold closure means comprising a starter head movably securable to a starter block assembly positionable within ingot withdrawal means such that as said starter head is advanced to and within said guide means at said mold exit, said starter head is movable laterally with respect to the direction of said advancement in response to the action of said guide means to align said starter head in said mold;

(c) means to affix said starter head to said starter block assembly, said means being adapted to so affix said starter head while said starter head is positioned in alignment within said guide means and prevent movement of said starter head lateral to the axis of said mold; and

(d) means to position said guide means at said exit end of said mold for aligning said starter head in said mold and to remove said guide means from said mold exit and contact with said starter head and closure means while said starter head is rigidly affixed to said starter block assembly and positioned within said mold exit, said means to position and remove said guide means comprising a C-shaped support frame pivotably mounted on each lateral side of said mold opening, each said frame carrying a plurality of said guide means, said C-shaped frame corresponding to the lateral edge side portions of said mold opening periphery and extending along said edge side and around and along the laterally outer regions of the upper and lower mold opening, said C-shaped frame being pivotably positionable at said mold outlet such that a guide means is positioned at the lateral edge side, an upper mold opening surface and at a lower mold opening surface for alignment of said mold closure means, said C-shaped frame being adapted to swing out of said mold outlet region for removal of said guide means from said mold exit.

4,454,908

CONTINUOUS CASTING METHOD

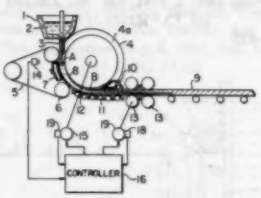
Hideyo Kodama; Eisuke Niyama, both of Katsuta; Munehiro Endo, and Tomoaki Kimura, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 24, 1982, Ser. No. 351,658

Claims priority, application Japan, Feb. 27, 1981, 56-27027

Int. Cl.³ B22D *11/16, 11/06*

U.S. Cl. 164—454 **15 Claims**



8. A continuous casting method comprising the steps of:

pouring a molten iron alloy into the entrance of a moving arcuate mould cavity formed between a rotary casting wheel having a peripheral casting groove on its outer periphery and a belt covering a part of said peripheral casting groove;

cooling the iron alloy within the moving arcuate mould cavity so that it forms a casting which is solidified at its surfaces and has a molten core at the exit of the moving arcuate mould cavity; and

continuously pulling out while imparting a tension to the casting from said moving mould cavity by means of pinch rollers which are operated at a peripheral speed ranging between 103 and 108% of the peripheral speed of said rotary casting wheel, so as to bend the casting from its arcuate shape at the exit of the moving arcuate mould cavity to a linear shape while the tension presses the casting into the surface of the bottom of the cavity groove to improve heat transfer.

4,454,909

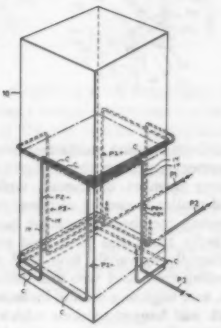
MOLD STATOR FOR ELECTROMAGNETIC STIRRING

Joseph A. Mulcahy, Brooklin, Canada, assignor to Co-Steel International Limited, Whitby, Canada

Continuation-in-part of Ser. No. 130,066, Mar. 13, 1980, abandoned. This application Feb. 4, 1981, Ser. No. 231,480

Int. Cl.³ B22D *27/02*

U.S. Cl. 164—504 **13 Claims**



1. Means for electromagnetic rotary stirring in combination with a continuous casting mold for steel, defining a steel movement direction therein, comprising:

groups of winding segments,

each group comprising a plurality of adjacent winding segments located outside said mold and extending in a longitudinal direction over a predetermined extent therealong, and each group being paired with a similar group of winding segments located approximately on the opposite side of said mold,

connections adjacent the one and the other end of said extent connecting winding segments of one paired group in series with winding segments of the other paired group such that electrical energization may be applied to the winding segments to cause current to flow in one direction in the group on one side of said mold and in the other direction in said paired group on the other side of said mold

where at least two such pairs of groups are provided with the groups in such pairs angularly disposed from one another in the same sense on opposite sides of said mold.

4,454,910

HEAT RADIATION CONTROL DEVICE

Yoshiro Miyazaki, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 19, 1981, Ser. No. 323,077

Claims priority, application Japan, Dec. 3, 1980, 55-169499; Jul. 31, 1981, 56-120124

Int. Cl.³ G05D *23/00*

U.S. Cl. 165—32 **5 Claims**

1. A heat radiation control device for maintaining the temperature of an apparatus as a heat source constant, comprising:

a base plate wherein said apparatus is mounted on a first face of said base plate;

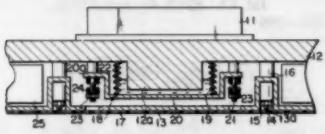
a radiating plate disposed on a second face of said base plate;

means for fixing said radiating plate at a predetermined space from said base plate;

a container comprising a flange member with a hole formed therein, a contact member facing said radiating plate, said contact member connecting with said second face of said base plate; said container being capable of expanding and contracting such that said contact member is brought into contact with and separated from said radiating plate, and a working fluid chamber defined inside said container;

a bolt and adjustable nut assembly wherein said bolt is fixedly attached to said base plate and inserted in said hole in said flange member;

means for urging said container toward said baseplate, said means for urging being positioned on said bolt between said flange and said nut such that adjustment of said nut adjusts the urging force of said means for urging;



a working fluid sealed in said working fluid chamber of said container for expanding said container against the urging force of said means for urging so that said contact member abuts against said radiating plate to radiate heat through said radiating plate when an amount of heat from said apparatus transferred through said base plate exceeds a predetermined value, and wherein said contact member further comprises a contact plate and a hollow bellows having a first end thereof coupled to said second face of said base plate and with a second end coupled to a first base of said contact plate, said working fluid chamber being fluid-tightly defined by said second face of said base plate, said first base of said contact plate and an inner peripheral surface of said bellows, and wherein said means for urging further comprises said bellows.

4,454,911

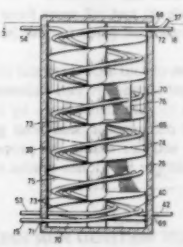
WASTE WATER HEAT RECOVERY APPARATUS

Morteza Arbabian, P.O. Box 1270, Madison, Wis. 53701

Division of Ser. No. 203,718, Nov. 11, 1980, Pat. No. 4,341,263. This application Jul. 23, 1982, Ser. No. 401,115

Int. Cl.³ F28D *15/00*

U.S. Cl. 165—104.19 **3 Claims**



1. A heat exchanger adapted for the recovery of heat contained in waste water, comprising:

(a) a container vessel having a top and a bottom and a cylindrical interior defined by walls formed of heat insulating material, and a heat transfer liquid having a high heat capacity filling the interior of the vessel;

(b) a heat conductive waste water conduit extending in a helical pattern from an inlet at the top of the vessel to an outlet at the bottom of the vessel;

(c) a heat conductive supply water conduit extending generally parallel to the waste water conduit within the vessel in a helical pattern extending from an inlet at the bottom of the vessel to an outlet at the top of the vessel;

(d) a helical baffle plate mounted within the interior of the vessel generally paralleling and between the turns of both the waste water and supply conduits to separate adjacent turns of the conduits;

(e) a central cylindrical core mounted in the interior of the vessel, the helical baffle plate extending from the outer walls of the cylindrical core to the inner walls of the container vessel to separate the interior of the vessel into a helical chamber containing the helically formed waste water and supply conduits, whereby convection mixing of heat transfer water within the vessel will be inhibited by the helical baffle, and whereby a temperature gradient will be produced in the heat transfer liquid within the helical chamber when warm waste water is introduced into the inlet end of the waste water conduit and discharged from the outlet end.

4,454,912

SWAB HOIST USE THEREOF IN CONVEYING CRUDE OIL AND NATURAL GAS

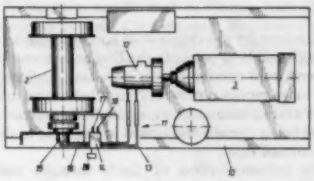
Johann L. Fröhlich; Josef Gamperl; Peter Hanak, all of Vienna, and Gerhard Wawra, Prottes, all of Austria, assignors to OMV Aktiengesellschaft, Vienna, Austria

Filed Aug. 7, 1981, Ser. No. 291,147

Claims priority, application Austria, Aug. 12, 1980, 4128/80

Int. Cl.³ E21B *37/10*

U.S. Cl. 166—53 **14 Claims**



12. Process for conveying crude oil and natural gas from a drilled well comprising:

(a) raising and lowering a piston by means of a cable;

(b) winding said cable on a cable drum by means of a driving motor;

(c) transmitting force from the driving motor to the cable drum by means of a hydraulic drive, said hydraulic drive comprising a hydraulic pump driven by the driving motor, a hydraulic motor connected to the cable drum, said hydraulic motor formed as a bearing for the cable drum, and a freewheel arranged between the hydraulic motor and the cable drum, said freewheel being arranged within the hydraulic motor itself, and a control means for adjusting the rate of the piston in the well, said hydraulic pump, hydraulic motor and control means being connected by pressure lines, said control means being controlled in response to the pressure of the crude oil and natural gas on the piston in the well.

4,454,913

SAFETY VALVE SYSTEM WITH RETRIEVABLE EQUALIZING FEATURE

Shelby L. Guidry, and Kerry D. Jernigan, both of Houston, Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Jan. 5, 1981, Ser. No. 222,537

Int. Cl.³ E21B *34/10*

U.S. Cl. 166—117.5 **16 Claims**

1. A safety valve system for use in a well having a packer isolating an interval of the well and a production string of tubing therein, for delivering produced fluids from the isolated

interval to the well surface through a bore in the tubing string, comprising:

safety valve means connected in the tubing string, said safety valve means including a closure member, said closure member being mounted on said tubing string and being adapted to be opened and held open by the pressure of a control fluid and automatically closed to shut said tubing string bore when said pressure is reduced; said packer and closure member serving to define a first portion of the well above said packer and closure member and a second portion of the well below said packer and closure member; and

conduit means for providing fluid communication other than through said bore between the first and second portions of the well, said conduit means including a wireline retrievable valve means removably installed in the tubing string above said closure member, said wireline retrievable valve means being opened and closed in response to the pressure of a control fluid;

whereby communication of fluids through said conduit means between said first and second portions of the well is shut off by said wireline retrievable valve means when said tubing mounted closure member is closed.

4,454,914

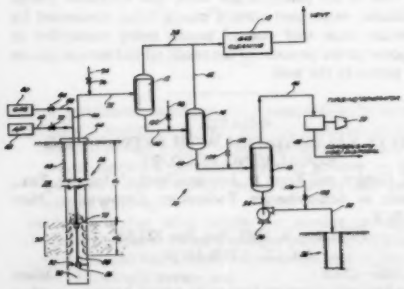
METHOD FOR CONDITIONING GEOTHERMAL BRINE TO REDUCE SCALE FORMATION

David J. Watanabe, Orange, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed May 3, 1982, Ser. No. 374,618

Int. Cl.³ E21B *41/02, 43/34*

U.S. Cl. 166—244 C **21 Claims**



1. A method for acidizing a hot aqueous geothermal liquid flowing through a conduit to reduce scale formation in said conduit, said acidizing method comprising introducing into said geothermal liquid a thermally stable acid precursor of a type which hydrolyzes in said geothermal liquid to form an acid which reduces the pH of said geothermal liquid at least in the relative downstream vicinity of where said acid precursor is introduced into said geothermal liquid.

4,454,915

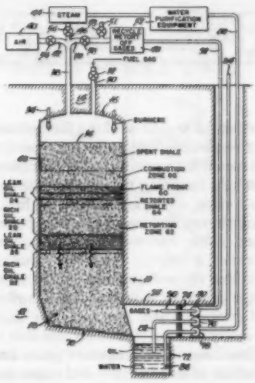
IN SITU RETORTING OF OIL SHALE WITH AIR, STEAM, AND RECYCLE GAS

Earl D. York, Englewood, and Jay C. Knepper, Denver, both of Colo., assignors to Standard Oil Company (Indiana) and Gulf Oil Corporation, both of Chicago, Ill.

Filed Jun. 23, 1982, Ser. No. 391,473

Int. Cl.³ E21B *43/263, 43/40*

U.S. Cl. 166—259 **9 Claims**



1. A process for retorting oil shale, comprising the steps of:

explosively forming an underground retort with fragmented layers of lean and rich, raw oil shale;

establishing a flame front in said underground retort;

sequentially heating said oil shale to a retorting temperature ranging from 800° F. to 1200° F. by passing said flame front sequentially through said retort to liberate shale oil and off gases from said oil shale;

supporting said flame front with a feed gas consisting essentially of air, steam and said off gases;

withdrawing said shale oil and off gases from said retort;

recycling said withdrawn off gases for use in said feed gas; and

varying the proportion of said air, steam and off gases in said feed gas for different leannesses and richnesses of said oil shale being heated by said flame front by increasing the proportion of said off gases in said feed gas for leaner grades of oil shale and decreasing the proportion of said off gases in said feed gas for richer grades of oil shale.

4,454,916

IN-SITU COMBUSTION METHOD FOR RECOVERY OF OIL AND COMBUSTIBLE GAS

Winston R. Shu, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 29, 1982, Ser. No. 445,118

Int. Cl.³ E21B *43/243, 43/34*

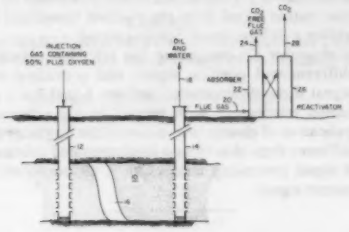
U.S. Cl. 166—260 **2 Claims**

1. A method for the recovery of oil and a combustible gas from a subterranean, oil-containing formation penetrated by at least one injection well and by at least one spaced-apart production well, comprising:

(a) initiating an in situ combustion operation in the formation by injecting an oxygen-containing gas containing at least

50 volume percent oxygen into the injection well to establish a combustion front in said formation and produce a flue gas;

(b) continuing injection of said oxygen-containing gas to support the in-situ combustion front which heats the oil in the formation reducing its viscosity and drives the mobi-



lized oil and flue gas through the formation toward the production well;

(c) withdrawing oil and flue gas separately from the formation via said production well; and

(d) separating CO_2 from said flue gas to produce a combustible flue gas, having a minimum heating value of 150 BTU/SCF.

4,454,917

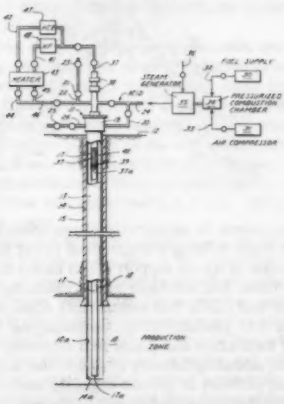
THERMAL ACIDIZATION AND RECOVERY PROCESS FOR RECOVERING VISCOUS PETROLEUM

Robert S. Poston, Winter Park, Fla., assignor to Carmel Energy, Inc., Houston, Tex.

Continuation of Ser. No. 91,764, Nov. 6, 1979, abandoned. This application Nov. 2, 1981, Ser. No. 317,338

Int. Cl.³ E21B *43/24, 43/27*

U.S. Cl. 166—303 **5 Claims**



1. A method for recovering a heavy viscous petroleum crude oil having an API gravity, at 60° F., of 22° or less from a subterranean formation containing clay particles creating adverse permeability effects, penetrated by a well bore, consisting of the steps of:

injecting a thermal vapor stream through the well bore, into the subterranean formation at high rates, to contact clay particles at a temperature of from about 550° to 650° F., and at a maintained pressure of from about 200 to about 1500 psig, which is below the formation fracture gradient pressure required for acid fracturing, to remove crude oil from the clay particles adjacent the well bore to expose the particles to the thermal vapor stream, said thermal vapor stream consisting of combustion gases obtained from combustion of hydrocarbon fuels at high pressures mixed with superheated steam;

injecting into the thermal vapor stream sufficient quantities of hydrogen chloride at a rate of from about 5 to 30 gallons of about 35 wt % of aqueous hydrochloric acid per hour to be vaporized by the heat content of the thermal vapor stream, when added as an aqueous solution, and to contact the exposed clay particles to react with magnesium and calcium salts in the particles;

injecting into the thermal vapor stream sufficient quantities of hydrogen fluoride at a rate of from about 5 to 30 gallons per hour of aqueous hydrofluoric acid having a concentration of about 70 wt % for a time sufficient to dissolve clay particles and improve permeability of the formation, said hydrofluoric acid, when added as an aqueous solution, being vaporized by the heat content of the thermal vapor stream;

ceasing acid injection;

continuing injection of the thermal vapor stream into the formation for sufficient time to reduce the viscosity of the petroleum crude while maintaining the formation pressure well below the formation fracture gradient pressure required for acid fracturing; and

recovering the crude oil from the formation.

4,454,918

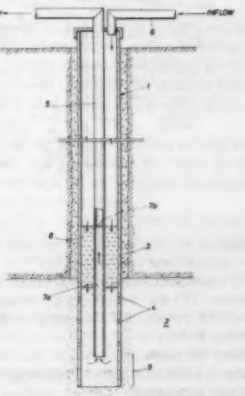
THERMALLY STIMULATING MECHANICALLY-LIFTED WELL PRODUCTION

Edwin A. Richardson, and Richard A. Hinson, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 19, 1982, Ser. No. 409,461

Int. Cl.³ E21B *43/24*

U.S. Cl. 166—303 **7 Claims**



1. A process for treating a liquid-productive well from which the rate of fluid production is undesirably low in response to an artificial lifting of liquid from the well which comprises:

arranging separate conduits in the well for conveying inflowing fluid to a location at least near the uppermost opening into the reservoir and conveying outflowing fluid from a location at least near the lowermost opening into the reservoir;

artificially lifting liquid from the well to the extent required to position the top of a substantially static column of liquid at a location at least near the uppermost opening into the reservoir;

inflowing into the well a self-reactive heating solution consisting essentially of an aqueous liquid solution of nitro-

gen-generating reactants for generating heat and gas at a significant but moderate rate at a temperature at least as high as the reservoir temperature;

initially inflowing the heating solution at a relatively fast rate such that a static column of liquid consisting essentially of unspent heating solution is formed in a location at least near the uppermost opening into the reservoir;

allowing the heating solution in said column of heating solution to at least begin generating a significant amount of heat; and

artificially lifting liquid from the well from a location at least near the lowermost opening into the reservoir while inflowing unspent heating solution into a location at least near the uppermost opening into the reservoir with the rates of the flow into and out of the well arranged so that portions of heat-generating heating solution are flowed along substantially all of the openings into the reservoir, so that an increase in the rate of liquid production from the well may indicate that that can be obtained by such treatment of the well.

4,454,919
AGRICULTURAL TRACTOR-TRAILER SLIPPAGE RECOGNITION SYSTEM AND METHOD

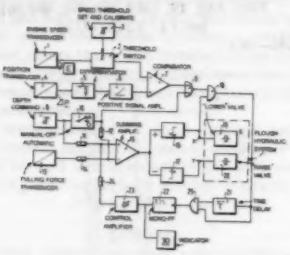
Winfried Arnold, Vaihingen, and Jan Viemmings, Rutesheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 1, 1981, Ser. No. 326,282

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1980, 3047100

Int. Cl.³ A01B *63/112, 79/00*

U.S. Cl. 172—1 **24 Claims**



1. Method to determine slip of driving wheels of a tractor pulling an agricultural implement (P)

in which a position transducer (4) is provided coupled to the implement (P) and providing a position signal representative of the position of the implement with respect to a reference level,

comprising the steps of

providing a reference signal representative of at least one reference parameter;

differentiating the position signal derived from the position transducer;

comparing the differentiated position signal and the reference signal,

and deriving an output signal when the differentiated position signal has a predetermined relationship with respect to the reference signal, indicative of change of position of the implement at a rate different from that defined by said predetermined relationship.

11. Agricultural soil working control apparatus having

an implement (P) adapted to dig into and work the soil;

a tractor having an engine (E) pulling the implement;

a position transducer (4) coupled to the soil working implement (P) and providing a position output signal representative of the position of the implement with respect to a reference level;

an implement positioning system (S) including a "raise" control element (20) and a "lower" control element (19) to respectively raise or lower the position of said implement with respect to the reference level;

and comprising, in accordance with the invention,

a reference signal source (1, 3, 2) providing a reference signal representative of at least one reference parameter;

a differentiator (5) connected to and controlled by the position output signal from the position transducer and providing a differentiated position signal;

a comparator (7) comparing the reference signal and the differentiated position signal, and providing an output signal if the differentiated position signal has a predetermined relationship with respect to the reference signal indicative of change of position of the implement at a rate different from that of said predetermined relationship;

and signal processing means (30; 9, 18) responsive to said output signal.

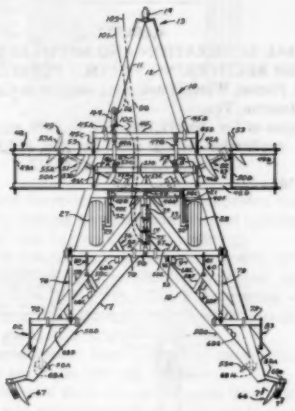
4,454,920
HIGH SPEED TILLAGE SYSTEM WITH DISCS AND PLOW POINTS

William J. Dietrich, Sr., Congerville, Ill., assignor to DMI, Inc., Goodfield, Ill.

Division of Ser. No. 150,730, May 19, 1980, abandoned. This application May 3, 1982, Ser. No. 373,897

Int. Cl.³ A01B *49/02, 63/32*

U.S. Cl. 272—464 **8 Claims**



1. Improvements in agricultural tillage apparatus comprising: a main frame defining a longitudinal center line extending in the direction of travel; support wheel means for supporting said main frame, first subframe means extending laterally on each side of said center line substantially equal distances and including a first plurality of ground-engaging tools spaced laterally of each other along said first subframe; second subframe means extending laterally of said center line and including a second plurality of ground-engaging tools spaced laterally of each other along said second subframe; first mounting means including a first hydraulic cylinder unit for mounting said first subframe means to said main frame means and for adjusting the height of said first subframe relative to said main frame means; second mounting means including a second hydraulic cylinder unit for mounting said second subframe means to said main frame for adjusting the height of said second subframe means relative to said main frame; hydraulic conduit means for coupling one of the respective corresponding rod and butt ends of said first and second hydraulic cylinder units together; second hydraulic conduit means for coupling the other ends of said first and second hydraulic cylinder units respectively to the input and output of reversible hydraulic

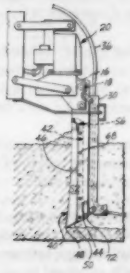
pressure source means; and first and second hydraulic cylinder units being constructed and arranged to adjust the height of said first and second subframe means respectively relative to said main frame means by predetermined amounts for a given displacement of hydraulic fluid from one of said cylinder units to the other by means of said first conduit means.

4,454,921

REPLACEABLE BLADE FOR CABLE LAYING PLOW

Harold R. Schlicker, Jr., 18012 Bothell Hwy., Bothell, Wash. 98011

Filed Jul. 13, 1981, Ser. No. 282,373
Int. Cl.[3] A01B *13/08, 15/02*
U.S. Cl. 172—699 6 Claims



1. In a cable laying plow, the improvement comprising:

a vertically elongated, upper end mounted, blade supporting shank having parallel sides, a leading edge and a trailing edge, and a lower end, said leading edge including a forwardly opening slot;

said mounting slot comprising a vertical major portion extending downwardly to the lower end of the shank and an upper end minor portion which extends forwardly from the vertical major portion;

said mounting slot being formed by sidewalls, said sidewalls including a vertical row of axially aligned pairs of transverse fastener openings where they form the vertical major portion of the slot, and at least one axially aligned pair of transverse fastener openings whereat they form the upper end minor portion of the slot, spaced forwardly of the vertical row of pairs of fastener openings;

an elongated replaceable blade member having a forward blade portion with upper and lower ends, and a rearward mounting spline;

said mounting spline being sized to be snugly received within the forward edge slot in the mounting shank, and including an upper end portion which extends forwardly over the upper end of the blade portion, and which is received in the upper end minor portion of said slot;

said blade portion having a leading edge, a base whereat said blade portion joins the mounting spline, and side surfaces which divert apart as they extend rearwardly from the leading edge to the base, said base being wider than the mounting shank;

said lower end of said blade portion extending below the lower end of the mounting shank;

said mounting spline including transverse fastener openings corresponding in number and spacing to the fastener openings in the slot forming sidewalls of the supporting shank; and

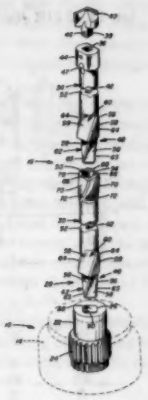
fastener elements extendable through the transverse openings in the slot forming sidewalls of the supporting shank and the corresponding transverse openings in the mounting spline of the replaceable blade member, for connecting the replaceable blade member to the supporting shank.

4,454,922

DRILL ROD AND DRILLING APPARATUS

Will B. Jamison, Bethel Park, and Harley G. Pyles, Bridgeville, both of Pa., assignors to Consolidation Coal Company, Pittsburgh, Pa.

Filed May 27, 1982, Ser. No. 382,375
Int. Cl.[3] F21B *17/22*
U.S. Cl. 175—323 24 Claims



1. A drill rod for rotary drilling comprising,

an assembly of drill rod members, said assembly having a drill bit receiving end portion and a driven end portion,

said assembly being formed by a plurality of releasably engageable drill rod members connected in end to end relation,

said drill rod members each including a shank end portion, a socket end portion and a body portion extending between said shank end portion and sad socket end portion,

said shank end portion of one drill rod member being releasably engageable in said socket end portion of an adjacent drill rod member,

means positioned on the external surface of said respective drill rod members for promoting the flow of air on the external surface of the drill rod adjacent the connection of one drill rod member to another,

said shank end portion having an external surface with a twisted configuration forming a plurality of faces revolving about the axis of said shank end portion,

said shank end portion including an enlarged portion and a reduced portion,

said twisted configuration extending in a continuous angular pattern on said enlarged portion and said reduced portion to provide a plurality of continuous angular faces extending on said enlarged portion and said reduced portion,

said socket end portion having an internal bore with a twisted configuration forming a plurality of faces revolving about the axis of said socket end portion,

said shank end portion of each drill rod member being insertably received in said socket end portion of an adjacent drill rod member,

said shank end portion reduced portion being drivingly received within said socket end portion internal bore,

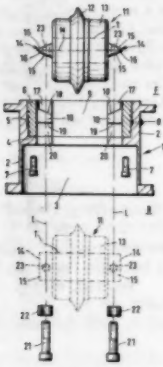
said socket end portion having an external surface with a twisted configuration forming a plurality of external faces extending in an angular pattern about the axis of said socket end portion, and

said shank end portion faces being positioned in abutting parallel relation with said socket end portion faces so that upon application of torque to said assembly said abutting faces are urged into increasing frictional engagement to prevent separation of said connected drill rod members.

4,454,923
HOLDING DEVICE FOR BORING HEAD TOOLS OR THE LIKE

Fritz Tibussek, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Wirth Maschinen-und Bohrgerate-Fabrik GmbH, Erkelenz, Fed. Rep. of Germany

Filed Aug. 9, 1982, Ser. No. 406,502
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1981, 3132345
Int. Cl.³ E21B *10/20*
U.S. Cl. 175—363 **14 Claims**



1. In a boring head tool, or the like, having rear mounted tools wherein at least one tool is rotatably mounted on a tool supporting member which is removably attachable to a tool holder having a front and a rear, the improvement comprising: supporting heads extending outwardly from opposite sides of said tool supporting member each having a larger dimension in a direction perpendicular to said outwardly extending direction than the dimension in said outwardly extending direction, support surfaces on said heads, screw-threaded bores in said heads, rigid support surfaces on the tool holder substantially facing the front thereof and substantially conforming to said support surfaces on said heads to engage and rigidly support said tool supporting member by said support surfaces on said heads when said tool supporting member is in the attached operating position in the tool holder, fastening screws engageable with said tool holder and engageable in said screw-threaded bores to releasably retain said tool supporting member in operating position with said support surfaces in contacting engagement, a passage extending through said tool holder from the rear to the front thereof, and further passages extending through said rigid support surfaces on said tool holder, said passages having sizes and configurations to facilitate inserting said tool supporting member and tool thereon through said tool holder from the rear toward the front to at least the front side of said support surfaces on said tool holder while said tool supporting member is orientated with respect to said tool holder in a position offset from the attached operating position.

4,454,924
COMBINATORIAL WEIGHING APPARATUS

Kazukiyo Minamida, Kouga, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Sep. 3, 1982, Ser. No. 414,648
Claims priority, application Japan, Sep. 4, 1981, 56-139982
Int. Cl.³ G01G *19/22, 13/16*
U.S. Cl. 177—25 **9 Claims**

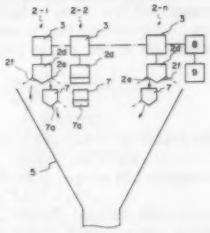
1. A combinatorial weighing apparatus comprising:

(a) a plurality of weighing hoppers adapted to receive batches of article to be weighed, each of said weighing hoppers being provided at its bottom with a first hopper gate and a second hopper gate;

(b) weight sensors corresponding to said weighing hoppers and adapted to weigh said batches of article received by corresponding weighing hoppers;

(c) a plurality of storage hoppers arranged to receive the article discharged from said second hopper gates of said weighing hoppers, each of said storage hoppers having a single third hopper gate;

(d) A combination control section adapted to select the best combination of said storage hoppers and weighing hoppers which provides a total weight equal to or most



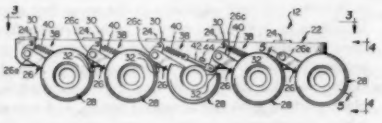
closely approximating a target weight within a predetermined tolerance, using the weight values of batches of article put in said storage hoppers and the weight values of batches of article received by said weighing hoppers, said weight values being obtained through weighing by said weight sensors, said combination control section being adapted to operate said third hopper gates of selected storage hoppers and said first hopper gates of the selected weighing hoppers, in accordance with the selected best combination; and

(e) a collecting chute which collects the article discharged from said storage hoppers and said weighing hoppers constituting the selected best combination.

4,454,925
UNDERCARRIAGE FOR ARMORED PERSONNEL CARRIER

Norman D. Oswald, Duncanville; Carl M. Franklin, Midlothian; Marc H. Gutzler, Duncanville, and Harry S. Mankey, Dallas, all of Tex., assignors to Standard Manufacturing Company, Dallas, Tex.

Filed Sep. 28, 1982, Ser. No. 426,218
Int. Cl.³ B62D *61/10*
U.S. Cl. 180—22 **24 Claims**



1. An undercarriage comprising:

an elongate hollow load bearing primary frame;

at least three secondary frames;

means supporting the secondary frames at longitudinally spaced points on the primary frame for pivotal movement with respect thereto;

at least three primary axles each having a first portion positioned within the primary frame and a second portion positioned within one of the secondary frames;

means supporting each of the primary axles for rotation both with respect to the primary frame and with respect to its associated secondary frame;

primary transmission means positioned within the primary

frame for drivingly interconnecting at least two of the primary axles;

drive means operably connected to the primary transmission means for actuation thereof whereby the drive means and the primary transmission means effect concurrent rotation of the interconnected primary axles;

a plurality of secondary axles each individual to one of the secondary frames and each having a wheel receiving member at one end thereof;

at least three wheel members each mounted on and secured to the wheel receiving end of one of the secondary axles;

means rotatably supporting the secondary axles in the secondary frames with each of the secondary axles extending out of its secondary frame and being rotatably supported in at least one side of its secondary frame;

at least two secondary transmission means each mounted in one of the secondary frames and each drivingly interconnecting one of the primary axles and its associated secondary axle;

each of the endmost secondary frames having a lever arm extending therefrom towards the center secondary frame;

the center secondary frame having two lever arms thereon each extending toward one of the endmost secondary frames;

at least two tension springs, one connected between the lever arm of one of the endmost secondary frames and the facing lever arm of the center secondary frame and the other connected between the lever arm of the opposite endmost secondary frame and the facing lever arm of the center secondary frame;

the tension springs and the lever arms cooperating to urge the secondary frames and the wheel members carried thereby to pivot away from the primary frame and toward the underlying surface; and

the endmost secondary frames and the wheel members carried thereby each being pivoted under the force of one tension spring and the center secondary frame and the wheel member carried thereby being pivoted under the action of two tension springs, whereby the center secondary frame and the wheel member carried thereby receive an increased pivoting force to facilitate skid steering of a vehicle incorporating the undercarriage.

4,454,926

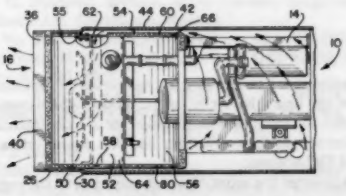
AIR INTAKE ON A TRACTOR ENGINE HOOD

Herbert G. Akins, Downers Grove, Ill., assignor to International Harvester Co., Chicago, Ill.

Continuation-in-part of Ser. No. 355,797, Mar. 8, 1982, abandoned, which is a continuation of Ser. No. 136,869, Apr. 2, 1980, abandoned. This application May 24, 1982, Ser. No. 381,140

Int. Cl.³ B60K *11/06*

U.S. Cl. 180—68.1 **5 Claims**



1. In a tractor having a forward projecting engine compartment at a front portion of said tractor, and a radiator compartment enclosure located in said front portion of said tractor in front of an engine located in said engine compartment, the improvement comprising:

a front grille opening said enclosure forwardwise and rear bulkhead partition closing it off rearwardwise;

a vertically disposed radiator carried in the radiator compartment of said radiator compartment enclosure dividing said compartment into an upstream section and a downstream section;

a top air entry port located on top of said radiator compartment enclosure, said top air entry port providing the air entrance to said upstream section of the radiator compartment;

first and second hood side sheets common to the engine compartment and to the radiator compartment enclosure, at least the first side sheet having a double wall defining a forwardly directed internal air passage in the top edge of said first side sheet;

an exhaust duct air delivery port in the side of said air passage in said radiator compartment enclosure;

a fan so situate in the downstream section that the exhaust duct air delivery port intervenes and exhausts between it and the radiator, for drawing air through said exhaust duct air delivery port and also through said radiator from said top air entry port to said downstream section;

an engine carried turbo supercharger in the engine compartment so situate as to be in closely spaced adjacency to said passage in the first side sheet and to the top rear of the engine at that side; and

a vent opening in said passage essentially facing said turbo supercharger for drawing the exhaust air from said engine compartment in close vicinity to the turbo super charger.

4,454,927

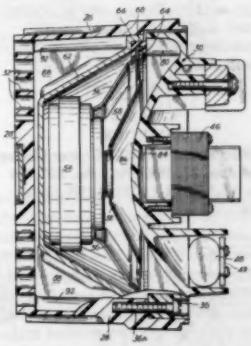
REENTRANT CONE DRIVEN LOUDSPEAKER

Frederick L. Seebinger, Kinnelon, N.J., assignor to Atlas Sound Division of American Trading and Production Corp., Parsippany, N.J.

Filed Dec. 21, 1981, Ser. No. 332,789

Int. Cl.³ H05K *5/00*

U.S. Cl. 181—152 **10 Claims**

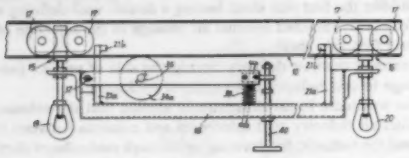


1. A miniaturized reentrant cone driven folded horn loudspeaker comprising a housing having a front wall, a side wall and a reflector plate for the radiation of sound, and a cone driven speaker means positioned within said housing and facing away from the front wall and toward said reflector back plate so that said reflector back plate, side wall and front wall radiate sound, and define a folded horn, and a resilient mounting means, said resilient mounting means surrounding the periphery of said cone speaker, said resilient mounting means being sandwiched between said housing and said reflector back plate to thereby secure and suspend said cone driven speaker means in said housing.

4,454,928
MOVABLE SCAFFOLD FOR BUILDINGS

Raymond Marteau, 29, Route de Vineuil, 77410 Saint-Mesmes, and Marcel R. Plaignaud, 29, Avenue de la Republique, Roissy-en-Brie-77680, both of France

Filed Feb. 23, 1981, Ser. No. 236,978
Claims priority, application France, Jun. 30, 1980, 80 14500
Int. Cl.³ E04G 3/10
U.S. Cl. 182—36 10 Claims



1. A movable scaffold for use on buildings, wherein a scaffold car is suspended from at least two carriages connected to each other by a removable cross bar having a length approximately equal to that of said scaffold car, said carriages being movable along a U-shaped rail formed by sections coupled together and mounted so as to overhang a top of said building by way of support means placed on said building's roof, said scaffold comprising:

a cross bar having a near end connecting said carriages;

a T-shaped safety bracket including a transverse bar, which transverse bar is disposed inside said U-shaped rail perpendicularly to a longitudinal plane of symmetry of said rail, said transverse bar being longer than the spacing of inward bent arms of said U-shaped rail; and wherein each support member comprises:

a soleplate placed against the top of a wall;

two stationary arms in a substantially vertical plane, integral with said soleplate, and converging so as to be able to carry an anchoring head;

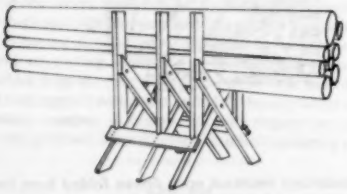
two movable arms able to pivot relative to said soleplate and converging so as to be able to carry a hooking member for supporting said scaffold car; and

a rod for regulating the position of said movable arms in relation to said stationary arms.

4,454,929
SAWBUCK

David Wellman, Star Route Box 227, Copper Center, Ak. 99573

Filed Jun. 27, 1983, Ser. No. 507,986
Int. Cl.³ B27B 21/00; A47B 37/00
U.S. Cl. 182—154 12 Claims



1. A portable sawbuck comprising:

(a) a plurality of support assemblies, each support assembly having a first cross member, a second cross member fixedly attached to the first crossmember by pivot means where they cross, one end of each of the crossmembers being formed to lie flat against the ground when in the upright, fully opened position;

(b) each support assembly also having a first vertical support member attached to the first cross member by pivot means, and a second vertical support member attached to the second cross member by pivot means, both pivot means being located where the vertical support members connect to each cross member;

(c) a first horizontal member being fixedly attached to the lower portion of each first cross member so as to connect the plurality of support assemblies together;

(d) a second horizontal member being fixedly attached to the lower portions of the second cross members of the support assemblies substantially in the same manner as the first horizontal member, and for the same purpose as the first horizontal member;

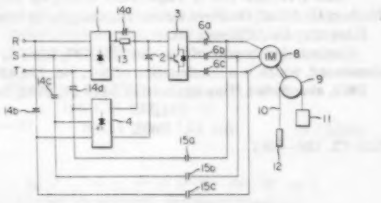
(e) support bracket means located so as to secure the lower end of each vertical member when the support assemblies are fully opened, in such a manner that the vertical members are plumb vertically when their lower ends are engaged in the support bracket means;

(f) a third horizontal member, being fixedly attached to the upper end of each first cross member, connecting the plurality of support assemblies so as to provide additional strength.

4,454,930
APPARATUS FOR CONTROLLING AN AC POWER ELEVATOR

Masami Nomura, Nagoya, and Hiroyuki Ikejima, Inazawa, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 14, 1982, Ser. No. 418,172
Claims priority, application Japan, Sep. 28, 1981, 56-153345
Int. Cl.³ H02J 9/00
U.S. Cl. 187—29 R 3 Claims



1. Apparatus for controlling an AC powered elevator having a case and being driven by an AC motor, which comprises:

a rectifier the input of which connectes to a commercial AC power source for converting said AC power into a regulated DC voltage;

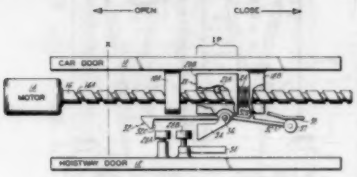
a main inverter the input of which connects to the output of said rectifier for converting said DC voltage into variable frequency AC power for driving said AC motor;

a regeneration inverter disconnectingly connected to; the output of said rectifier, said main inverter, said AC motor, and said commercial AC power source for sending the regenerated electric power from said AC motor rack to said commercial AC power source when regeneration braking is applied to said AC motor and for supplying AC power to said AC mtor when a defect detector is activated.

4,454,931
ELEVATOR DOOR OPERATOR HAVING A VARIABLE PITCH LEAD SCREW

Robert L. Leiner, Simsbury, and John K. Salmon, South Windsor, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Continuation-in-part of Ser. No. 307,391, Sep. 30, 1981, Pat. No. 4,410,067. This application Apr. 8, 1983, Ser. No. 483,462
The portion of the term of this patent subsequent to Oct. 18, 2000, has been disclaimed.
Int. Cl.³ B66B *13/12*
U.S. Cl. 187—52 LC **8 Claims**



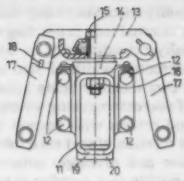
1. Apparatus characterized by:
a pair of parallel sliding doors;
a motor-powered drive unit to open and close the doors;
a coupling assembly which connects the doors to the drive unit, said assembly being propelled by the drive unit between a first position at which the doors are opened and a second position at which the doors are closed, said assembly including a block-like member which, as the assembly moves in one direction, pushes one door in that direction, a first arm on the block-like member for pushing the second door in that one direction, a second arm on said block-like member for grabbing each door as the block-like member is moved in a second direction, opposite the first direction, said second arm being retractable to disengage its connection with both doors when the assembly is at the first position;
a control surface, stationary relative to the assembly, for controlling the second arm as the assembly moves to said second position and causing the second arm to retract to the disengaged position;
said drive unit comprising a variable pitch lead screw which is rotated by a motor to move the coupling assembly linearly in the direction in which the doors open and close, said pitch defining the door velocity profile.

4,454,932
SUSPENSION MEANS FOR A RAIL VEHICLE DISC BRAKE UNIT

Fred S. Emilsson, Trelleborg; Lars M. Severinsson, Hishult, and Bo G. Stensson, Brösarp, all of Sweden, assignors to SAB Industri AB, Landskrona, Sweden

PCT No. PCT/SE81/00295, 371 Date May 28, 1982, 102(e) Date May 28, 1982, PCT Pub. No. WO82/01355, PCT Pub. Date Apr. 29, 1982
PCT Filed Oct. 12, 1981, Ser. No. 395,074
Claims priority, application Sweden, Oct. 16, 1980, 8007261
Int. Cl.³ B61H *13/38*
U.S. Cl. 188—59 **7 Claims**

1. Suspension means for a rail vehicle disc brake actuating unit on a bogie of a vehicle, which comprises in combination a caliper, brake pad holders with brake pads associated therewith, and a brake cylinder for applying said brake pads on the brake pad holders against said brake disc, suspension links pivotally connected to the brake pad holders and to a suspension framework attached to said bogie of the vehicle, and a further supporting connection means between the framework and the brake unit comprising suspension means including connection means comprising a block of rubberlike material stiff in the brake pad application direction of vertical coordinate y but comparatively resilient in other coordinate directions x and z to permit movement in the two other dimensions x and z and angular movements in the vertical y and horizontal (x, z) planes, characterized in that said connection means comprises a fixed member, a member conditionally movable relatively thereto, a joint comprising a screw attached to said fixed

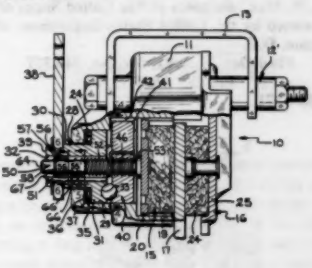


member and loosely extending through a hole defined in said member conditionally movable relative thereto, a bell-shaped cover arranged on each side of the movable part around the screw to define a compartment, and said block comprising a ring-shaped rubber cushion filling the compartment defined by each cover, the movable member and the screw.

4,454,933
DISC BRAKE

Harry A. Hunnicutt, Cedarburg, and James A. Buckley, Milwaukee, both of Wis., assignors to Kelsey Hayes Company, Romulus, Mich.

Filed Apr. 27, 1981, Ser. No. 258,067
Int. Cl.³ F16D *65/56*
U.S. Cl. 188—71.9 **3 Claims**



1. A mechanically-actuated disc brake, including a rotor, rotatable about an axis, having a pair of friction surfaces, one on each side thereof, friction element means in juxtaposed relation with each of said rotor friction surfaces, a housing having a bore extending axially therethrough, brake-applying means within said bore for urging said friction element means into engagement with said rotor friction surfaces, said brake-applying means including a cam assembly in juxtaposed relation with said bore, said cam assembly including a rotatable and a nonrotatable cam member defining a gap therebetween, a push rod communicating with said friction element means, said push rod having a threaded portion thereof coaxially positioned within, and circumscribed by, said cam assembly, said nonrotatable cam member threadably engaging said threaded portion of said push rod, whereby upon normal brake actuating rotation of said rotatable cam member, the combination of said nonrotatable cam member and said push rod axially translates in a forward brake-applying direction urging said push rod into direct engagement with said friction element means thereby effecting frictional engagement of said friction element means with said rotor friction surface, means for biasing the combination of said nonrotatable cam member and said push rod in a rearward brake-releasing direction upon counter rotation of said rotatable cam member, adjusting means for

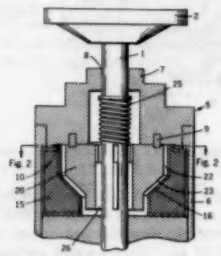
rotating said push rod relative to said nonrotatable cam member, thereby forwardly advancing said push rod with respect to said nonrotatable cam member, said adjusting means including clutch means for rotating said push rod with respect to said nonrotatable cam member in response to rotation of said rotatable cam member, said clutch means including a one-way spring clutch frictionally circumscribing said push rod and including at least one external tang projecting radially outward and engaging an axially-extending slot in said rotatable cam member, the circumferential width of said axially-extending slot in said rotatable cam member being greater than the circumferential width of said external tang whereby said one-way spring clutch slips and rotates with respect to said push rod after a predetermined rotation of said rotatable cam member in a first rotary direction and drivingly rotates said push rod relative to said nonrotatable cam member in response to counter-rotation of said rotatable cam member in a second rotary direction, thereby indexing said push rod in said forward axial direction to maintain the clearance between said friction elements and said rotor, a one-way spring brake having a portion extending into said gap circumscribingly and threadingly engaging a threaded portion of said push rod extending into said gap, whereby said one-way spring brake frictionally engages threads in said gap, one end of said one-way spring brake being rotationally fixed to said nonrotatable cam member, thereby allowing said push rod to rotate in said second rotary direction so as to forwardly index said push rod and frictionally resisting rotation of said push rod in said first rotary direction.

4,454,934

ROTATABLE STEM AND LOCK

Joseph E. Deveney, and Stephen N. Sanderson, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 27, 1981, Ser. No. 315,377
Int. Cl.³ B60T *13/04*
U.S. Cl. 188—171 **6 Claims**



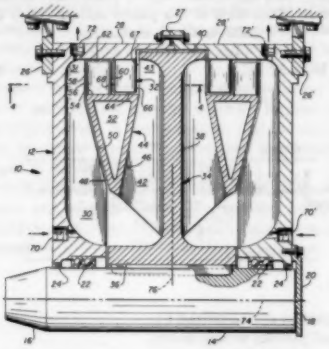
1. A stem assembly including an electro-mechanical lock comprising: a round stem including handle means at one end for manual rotation of said stem; a cylindrical housing including wall means for surrounding said stem and a cap at one end adjacent said handle having an aperture for passage of said stem; solenoid means for generating a magnetic field, when energized, fastened to an interior surface of said wall means; armature means for reacting with said solenoid encircling said stem; means for coupling said armature for rotation with said stem, said means permitting longitudinal movement of said armature with respect to said stem from a first position when said solenoid is energized to a second position when said solenoid is not energized; and locking means comprising at least one projecting member on one of said armature or said housing means, and at least one aperture on the other of said armature or said housing means for receiving said projecting member when said armature is in one of the first or second positions, said projecting member being clear of said armature when said aperture is in the other of said first or second positions.

4,454,935

HYDRODYNAMIC BRAKE

Dale H. Pryor, Midland, Tex., assignor to Oime, Inc., Odessa, Tex.

Filed Jul. 14, 1981, Ser. No. 283,273
Int. Cl.³ F16D *57/02*; F01D *1/12*
U.S. Cl. 188—296 **12 Claims**



1. A two stage hydrodynamic brake apparatus comprising a housing, spaced stators fixed within the interior of said housing, a shaft journaled for rotation within said housing, an impeller assembly;

said impeller assembly includes a wheel attached to said shaft, said wheel terminates in a rim, said wheel and rim form opposed annular cavities on either side of the wheel; said impeller assembly includes a plurality of vanes which are affixed to said rim and wheel on opposed sides of said wheel; said vanes divide each said annular cavity into circumferentially spaced impeller pockets;

and further including other spaced stators affixed to the interior of the housing in spaced relationship to the first recited stators; said impeller assembly includes turbine pockets supported by said wheel; said turbine pockets are positioned on opposed sides of said wheel in spaced relationship respective to said vanes;

a fluid inlet and a fluid outlet by which fluid can flow to and from said housing;

each turbine pocket and the outer marginal end of each vane being placed in closed proximity to one of the stators and spaced from one another by said stators; said stators being placed in close proximity of said turbine pocket and spaced from one another by said turbine pocket.

4,454,936

EMERGENCY AND PARKING BRAKE ARRANGEMENT IN VEHICLE BRAKING SYSTEM

Stanley S. Wise, P.O. Box 3905, Lantana, Fla. 33462

Filed Apr. 1, 1982, Ser. No. 364,509
Int. Cl.³ B60K *41/26*
U.S. Cl. 192—4 A **4 Claims**

1. A braking system for a vehicle having an automatic transmission operable by a shift lever having a "park" position, said braking system comprising:

a fluid pressure-operated brake system for applying the vehicle brakes;

a brake pedal for actuating said fluid pressure operated brake system to apply the brakes;

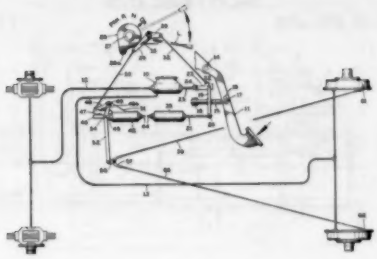
a mechanical linkage which is operable to apply at least one brake on the vehicle independent of said fluid pressure-operated brake system;

coupling means acting between the brake pedal and said linkage to operate the latter to apply said last-mentioned

brake upon overtravel of the brake pedal when the latter is depressed;

means for disabling said fluid pressure-operated brake system from applying the brakes in response to depression of the brake pedal when the shift lever is in its "park" position; said shift lever for the transmission also having a "drive" position;

said fluid pressure-operated brake system including a master cylinder and a piston displaceable in one direction in said



master cylinder to apply hydraulic pressure for engaging the brakes;

means providing a mechanical coupling between the brake pedal and said piston in the master cylinder to displace said piston in said one direction in response to depression of the brake pedal;

and means operable by said shift lever for engaging said mechanical coupling when the shift lever is in its "drive" position and for disengaging said mechanical coupling when the shift lever is in its "park" position.

4,454,937

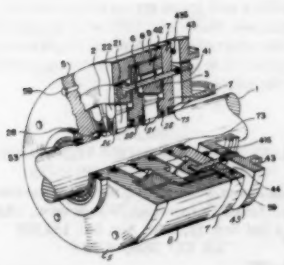
CLUTCH-BRAKE DEVICE

Long S. Yang, No. 14-1, Pu Ting Rd., Hsin Tsu City, Taiwan

Filed Jul. 14, 1981, Ser. No. 283,287

Int. Cl.³ B60K *41/24*; F16D *41/07*

U.S. Cl. 192—12 B **22 Claims**



1. A clutch device, comprising:

(a) a rotary driving member having a longitudinal axis and a peripheral surface;

(b) a circular driven member coaxially mounted over said driving member, having an inner periphery and outer periphery;

(c) a plurality of wedges arranged around said rotary driving member, each wedge being pivotally mounted on a fulcrum block arranged on said inner periphery of said driven member and having a point of contact with said peripheral surface, a pivot center and a wedge axis passing through said point and said pivot center;

(d) resilient means for resiliently urging said wedges toward said fulcrum blocks and resiliently keeping said wedges in an angular relationship with said driving member so that said wedge axis forms an inclination angle at one side of a normal line passing through said point of contact and perpendicular to said peripheral surface of said driving member; and

(e) wedge operating means provided with said circular driven member for moving said wedges toward and contacting said rotary driving member.

4,454,938

ROTARY HIGH POWER TRANSMISSION ARRANGEMENT

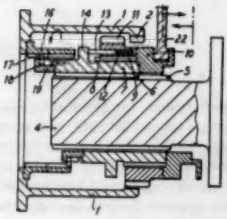
Herbert A. Clements, Woking, England, assignor to S. S. S. Patents Limited, Middlesex, England

Filed Feb. 24, 1982, Ser. No. 351,742

Claims priority, application United Kingdom, Mar. 3, 1981, 8106690

Int. Cl.³ F16D *23/06, 23/08*

U.S. Cl. 192—67 A **5 Claims**



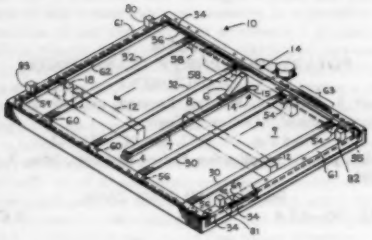
1. A rotary high power transmission arrangement comprising a toothed clutch which includes a first rotary clutch part carrying a ring of clutch teeth and a second rotary clutch part carrying an intermediate part, a portion of the intermediate part carrying a ring of clutch teeth and being movable relative to the second rotary clutch part to bring the clutch teeth carried by the said portion into and out of interengagement with the clutch teeth carried by the first rotary clutch part, the arrangement further comprising a baulking mechanism which obstructs movement of the intermediate part in the clutch-engaging direction when the first and second rotary clutch parts are in relative rotation in at least one direction, the baulking mechanism comprising baulking members carried by one of the two parts comprising the first rotary clutch part and the intermediate part and blocking members carried by the other of the said two parts and rotatable with light friction relative to the latter, the baulking members having surfaces against which the blocking members abut when the first and second rotary clutch parts are in relative rotation in at least one direction and having baulking abutments against which the blocking members abut if an attempt is made to engage the toothed clutch whilst the first and second rotary clutch parts are in relative rotation in at least the said one direction, the said surfaces being inclined relative to the direction of motion of the intermediate part with respect to the second rotary clutch part between positions corresponding to the engaged and disengaged conditions of the toothed clutch such that, when the first and second rotary clutch parts are brought to rotational synchronism, the toothed clutch is engageable since the movement of the intermediate part in the clutch-engaging direction is accompanied by movement of the blocking members away from the said surfaces and clear of the said baulking abutments.

4,454,939

APPARATUS FOR TRANSPORTING SAMPLE HOLDERS

Richard S. Kampf, Costa Mesa; Chul H. Sohn, Irvine, and Aurangzeb K. Khan, Costa Mesa, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 15, 1981, Ser. No. 330,933
Int. Cl.³ B65G 43/00
U.S. Cl. 198—341 6 Claims



1. In a transport system for circulating sample holders of mixed widths along a rectilinear path, past an operating station in a sample holder storage compartment having first and second parallel conveyors disposed one on each side of said operating station for conveying sample holders positioned thereon in first and second opposite longitudinal directions toward and away from said operating station;

first and second bidirectional drive means for driving said first and second conveyors respectively;

guide means adjacent each end of said first and second conveyors for halting the motion of sample holders in said first and second longitudinal directions, respectively, and to define first and second longitudinal stop positions for each sample holder;

said first longitudinal stop position and situated adjacent said operating station;

lateral drive means for engaging each sample holder in said first and second longitudinal stop positions and for moving said sample holders laterally along said guide means beteen said first and second conveyor means to a first or second lateral stop position, said lateral drive means moving said sample holder into and then away from an operating position at said operating station when said sample holder reaches said first longitudinal stop position;

said transport system including:

regulating means for automatically regulating the quantity of sample holders occupying said first and second conveyor means in accordance with space available thereon;

said regulating means including first and second sensor means operative when said transport system is operated in a counterclockwise direction, for sensing when one of said first or second conveyors is fully occupied by sample holders positioned thereon; and

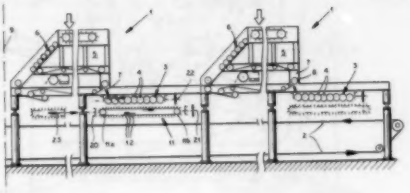
control means responsive to said first and second sensor means for stopping and momentarily reversing the direction of one of said first or second conveyors when the other conveyor is filled with sample holders so as to prevent the transfer of additional sample holders by said lateral drive means to said conveyor.

4,454,940

APPARATUS FOR FORMING MATS, ESPECIALLY FOR THE PRODUCTION OF PARTICLEBOARD

Werner Ufermann, Brüggen-Haverslohe, Fed. Rep. of Germany, assignor to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Apr. 15, 1982, Ser. No. 368,848
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1981, 3115728
Int. Cl.³ B65G 47/24
U.S. Cl. 198—374 9 Claims



1. An apparatus for forming a mat of comminuted material for the production of pressed board, comprising:

a conveyor belt forming a transport path and a receiving surface for said mat; and

a plurality of spreading machines spaced apart along said band for depositing respective layers of comminuted material on said surface to form said mat, each of said spreading machines comprising:

means for receiving said comminuted material, a feeder connected to said receiving means for displacing said comminuted material, and a roller grate oriented above said surface and receiving said comminuted material from said feeder for depositing said comminuted material in a respective layer with longitudinal orientation of the comminuted material in the direction of movement of said belt, at least one of said machines being provided with a transverse orienter between said roller grate and said belt for imparting a transverse orientation to the comminuted material deposited on said belt, and means for shifting said transverse orienter between a position wherein said transverse orienter is interposed between the roller grate of said one of said machines and said belt and a position in which said transverse orienter is offset from the interposed position.

4,454,941

APPARATUS AND METHODS FOR HANDLING ELECTRICAL COMPONENTS

John Fajt, and James V. Neal, Jr., both of Wynnewood, Okla., assignors to Xenell Corporation, Wynnewood, Okla.

Filed Sep. 12, 1980, Ser. No. 186,589
Int. Cl.³ B65G 47/24
U.S. Cl. 198—389 9 Claims

2. An automated system for handling articles, comprising:

rotating roller means, including a pair of rollers, for vertically orienting said articles by suspending said articles between said rollers;

drive means, operatively associated with said pair of rollers, for rotating said rollers and for thereby advancing each of said articles in sequence to a forwardmost first predetermined position on said rollers;

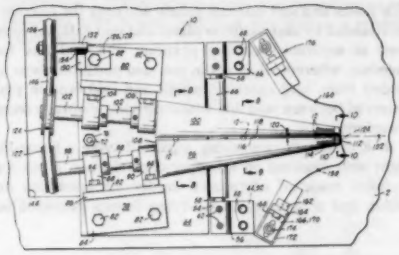
resilient retaining means for releasably retaining each one of said articles sequentially one at a time at said forwardmost first predetermined position on said rollers by continuously applying a retaining force to said one article so long as said one article is located at said first predetermined position;

a rotatable turret frame means;

a plurality of vertically movable article holder means, con-

nected to said rotatable turret frame means, each one of said plurality of article holder means being a means for receiving said one article positioned at said forwardmost first predetermined position on said rollers, and for releasably holding said one article in a fixed position relative to said article holder means; and

wherein said roller means, said retaining means, said rotatable turret frame means, and said article holder means are



so arranged and constructed that said rotatable turret frame means moves said article holder means, with said one article held in said fixed position relative to said article holder means, in an initial substantially horizontal direction, substantially parallel to a path of movement of said articles on said pair of rollers, to move said one article off of said pair of rollers and past said resilient retaining means.

4,454,942

SYSTEM FOR CONVEYING CONICAL ARTICLES

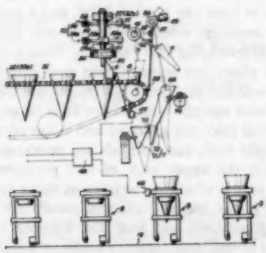
Yoshio Oizumi, Ibaragi, Japan, assignor to Yamakyu Automatics Co., Ltd., Osaka, Japan

Filed Oct. 23, 1981, Ser. No. 314,515

The portion of the term of this patent subsequent to Jul. 7, 1998, has been disclaimed.

Int. Cl.³ B65G *47/26*

U.S. Cl. 198—424 **3 Claims**



1. In an apparatus disposed above a conveyor belt for feeding articles onto said conveyor belt, a system for conveying conical articles comprising a pair of circulating chains provided side by side on the opposite sides of a path of transfer of said conical article and spaced apart from each other by a distance slightly smaller than the largest diameter of said conical article, main shutters openably disposed at the downstream end of said transfer path for closing said path at a specified position, subshutters arranged on the upstream side of said main shutters for controlling transfer of a second conical article from the downstream end, a receiving assembly including a receiving piece disposed below the downstream end of said transfer path and an opening piece movable toward or away from said receiving piece for receiving between said pieces said conical article falling from said transfer path, an article detector for detecting that an article has reached the downstream end of said transfer path, a stand detector for detecting a stand on the conveyor belt passing below said receiving assembly, and a control unit for operating drive means coupled to said receiving assembly to reciprocate said opening piece once in response to every signal emitted from said stand detector and for emitting a signal for operating drive means coupled to said main shutters to reciprocate said main shutters once when receiving a signal from said article detector after the completion of the single reciprocation of said opening piece; said conveyor belt comprising a multiplicity of support bars arranged side by side and each having branches projecting from the opposite sides of said support bar, and a connecting rod attached to said branches on one side of each said support bar is engaged with said branches on the other side of adjacent said support bar.

4,454,943

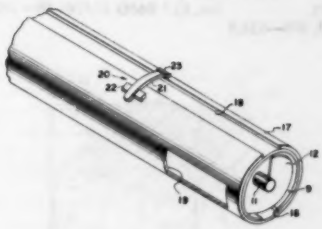
AUGER HOUSING CONSTRUCTION

Richard W. Moller, Fenton, Mich., assignor to Hydreclaim Corporation, Fenton, Mich.

Filed Dec. 7, 1981, Ser. No. 327,755

Int. Cl.³ B65G *33/00*

U.S. Cl. 198—657 **7 Claims**



1. Apparatus for feeding material along a conduit having an inlet, and an outlet at a discharge end axially spaced from said inlet; a rotary auger extending along said conduit adjacent its bottom for moving material along said conduit toward the outlet at its discharge end, said bottom of said conduit having an uninterrupted, elongate slot therein extending axially of said conduit and through which material from said conduit may pass; a cover member; and means mounting said cover member on said conduit for rotary and axial movements relative to said conduit, said cover member having an uninterrupted passage therein extending the entire length of said cover and through which material discharged through said slot may pass when said cover is rotatably adjusted to a position in which said passage registers with said slot, said cover having a length greater than that of said slot thereby enabling said cover to be extended axially beyond the discharge end of said conduit and effectively extend the length of said conduit when said cover occupies a position in which said passage is out of register with said slot.

4,454,944

ONE WAY SHARPS RECEPTACLE

Richard A. Shillington, 1291 Clayford Ave., Westlake Village, Calif. 91361, and Alec Oberschmidt, 1368 Hymettus, Leucadia, Calif. 92024

Filed Mar. 29, 1982, Ser. No. 362,875

Int. Cl.³ A61M *5/32*; B02C *19/12*

U.S. Cl. 206—366 **12 Claims**

1. A container for disposing of hazardous articles, said container comprising:

a top, a generally flat bottom, and a continuous peripheral wall defining a generaly flat front and back walls and semi-circular end walls interconnecting the top and bottom for defin-

ing a container having a width defined by the distance between the end walls greater than the thickness defined by the distance between the front and back walls, said top including an open-

ing proximate the center thereof and an elongated generally cylindrical neck communicating with and extending upwardly terminating in an outer open end spaced from the opening, and a one way closure covering the outeropen end of said neck.

4,454,945

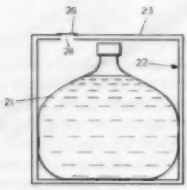
MULTIWALL CONTAINER

Saleh A. Jabarin, Holland, and Wendell J. Kollen, Maumee, both of Ohio, assignors to Owens-Illinois Inc., Toledo, Ohio

Filed Sep. 10, 1982, Ser. No. 416,749

Int. Cl.³ B65D *81/24*

U.S. Cl. 206—524.3 **6 Claims**



1. A sealed composite plastic container of liquid which is at essentially atmospheric pressure when at 20° C., said container having inner and outer spaced apart unfoamed plastic walls, each said wall consisting essentially of barrier material, the inner plastic container wall being within a wooden or paperboard container or box and the outer plastic container wall encompassing the wooden or paperboard container or box which supports said outer plastic container wall, the space between said plastic walls containing a gas or vapor, wherein said gas or vapor at the time of initial packaging of the liquid in the container contains less than ten volume percent elemental oxygen and wherein said gas or vapor is not reactive with oxygen.

4,454,946

COLLAPSIBLE PARTITIONED CORRUGATED CARDBOARD CONTAINER

Koichi Yokowo, Tokyo, Japan, assignor to Toppan Containers Co., Ltd. and Toppan Printing Co., Ltd., both of, Japan

Filed Sep. 21, 1981, Ser. No. 304,201

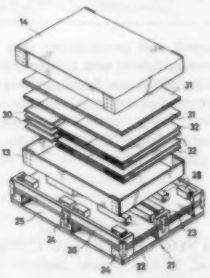
Claims priority, application Japan, Sep. 22, 1980, 55-134899[U]

Int. Cl.³ B65D *19/20*

U.S. Cl. 206—600 **6 Claims**

1. A container comprising a pallet having a frame-like upright wall disposed on an upper deck thereof, a box forming member made of corrugated cardboard assembled on said pallet, and a plurality of receiving frames provided on said upper deck within said upright wall thereby forming grooves between said receiving frames and said upright wall; said box forming member comprising two sets of foldable partition plates in which each set includes a pair of L-shaped panels secured back-to-back, four L-shaped external panels which form corner portions, at least one bottom plate, and a pair of lids; said box forming member, wherein when in use, said bottom plate is positioned overlying said receiving frames, lower ends of said partition plates are inserted into said grooves between said upright wall and said receiving frames and stood upright internally of said upright wall, lower ends of said external panels are inserted into said grooves and stood upright internally of said upright wall, and said lids are positioned one within the other over the upper ends of said partition plates and said external panels whereby the internal space surrounded by said partition plates and said external panels are used as separate receiving portions; and said box forming member, wherein when not in use, said partition plates in their folded from, said external panels, and said bottom plate are received between said lids which provide a storage receptacle therefore.

4. A container comprising a pallet having a frame-like upright wall disposed on an upper deck thereof, a box forming member made of corrugated cardborad assembled on said pallet, and a plurality of receiving frames provided on said



upper deck within said upright wall forming grooves between said receiving frames and said upright wall; said box forming member comprising two sets of foldable partition plates in which each set includes a pair of U-shaped panels secured back-to-back, four U-shaped external panels which form side portions, at least one bottom plate, and a pair of lids; said box forming member, wherein when in use, said bottom plate is positioned overlying said receiving frames, lower ends of said partition plates are inserted into said grooves between said upright wall and said receiving frames and stood upright internally of said upright wall, lower ends of said external panels are inserted into said grooves and stood upright internally of said upright wall, and said lids are positioned one within the other over the upper ends of said partition plates and said external panels whereby the internal space surrounded by said partition plates and said external panels are used as separate receiving portions; and said box forming member, wherein when not in use, said partition plates in their folded form, said external panels, and said bottom plate are received between said lids which provide a storage receptacle therefore.

4,454,947

PRODUCT INSPECTION AND EJECTION SYSTEM

Bernard J. Jacobsmeyer, St. Louis, Mo., and Gary D. Reding, Godfrey, Ill., assignors to Olin Corporation, Stamford, Conn.

Filed Dec. 7, 1981, Ser. No. 327,866

Int. Cl.³ B07C *5/04*

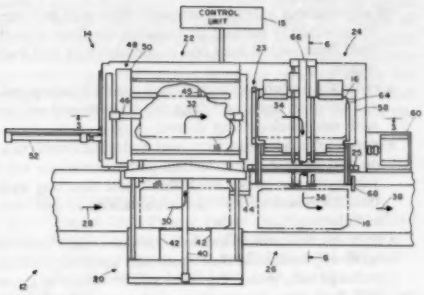
U.S. Cl. 209—548 **10 Claims**

1. A method of automatically removing products of an unacceptable height from an array of products in a production line, which comprises the steps of:

(a) supporting a quantity of said products in a product carrier in an array of rows and columns;

(b) moving said carrier to a gauging station;

(c) placing said array between a planar reference plate and an array of gauging members of known height;
(d) uniformly raising said planar reference plate, relative to said carrier plate and said gauging members, to a predetermined height position so as to cause said planar reference plate to support said product array and said product array in turn to support said array of gauging members;
(e) measuring the height of each gauging member in said array of supported gauging members;
(f) generating a first rejection signal corresponding to each gauge member whose height is not within a predetermined range;



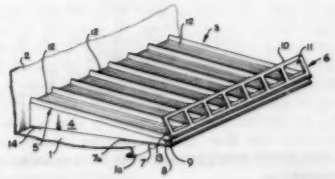
(g) storing said first rejection signals;
(h) lowering said planar reference plate, relative to said carrier plate and said gauging members, so that said product array is again supported by said carrier plate;
(i) moving said carrier plate to a rejection station;
(j) selectively activating a product removal device in response to said first rejection signals so as to automatically remove from said carrier plate only those products corresponding to gauging members which had an unacceptable height during said measuring; and
(k) returning said carrier plate to said production line.

4,454,948

GRAVITY FEED DISPLAY UNIT

William S. Spamer, Roswell, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Nov. 23, 1981, Ser. No. 323,962
Int. Cl.³ A47F 5/00
U.S. Cl. 211—49 D **2 Claims**



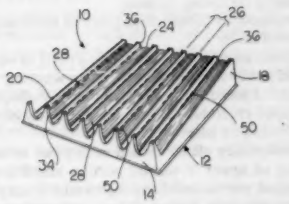
1. A gravity feed display unit for displaying articles and comprising a wedge shaped structure having a thin lowermost edge and flat upper and lower surfaces and being arranged for mounting on a generally horizontal support in such manner that the flat upper surface thereof is disposed in an inclined plane and the flat bottom surface thereof including its rear edge is generally horizontal, a generally horizontal rail transverse to said inclined plane and having a pair of generally horizontal transverse vertically spaced flanges for receiving therebetween the lowermost edge of said wedge shaped structure and having a generally horizontal transverse bumper bar extending upwardly and transversely of said lowermost edge of said wedge shaped structure, a plurality of generally channel shaped low friction elements mounted on said wedge shaped structure in side by side relation and forming a plurality of downwardly inclined guide paths for respectively receiving a plurality of rows of articles and having their lowermost ends abutting said rail, the lowermost article in each row being engageable with said transverse bumper bar whereby movement thereof is arrested, and said wedge shaped structure having a generally vertical rear surface, a tape having adhesive on opposite surfaces thereof secured to the rear surface of said wedge shaped structure so as to form a bond with a vertical panel at the rear of said wedge shaped structure, and a bracket of generally L-shaped configuration and whose vertical part is engageable with said tape in such manner that a horizontal part of said bracket underlies and engages a lower surface of said support so as to secure the rear of said wedge shaped structure against upward movement.

4,454,949

PRODUCT MERCHANDISING DISPLAY UNIT

Paul Flum, University City, Mo., assignor to Paul Flum Ideas, Inc., St. Louis, Mo.

Filed Apr. 16, 1982, Ser. No. 369,102
Int. Cl.³ A47F 7/16
U.S. Cl. 211—49 D **17 Claims**



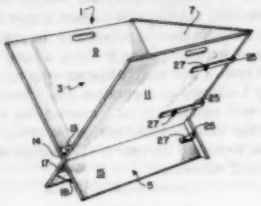
1. A product display and merchandising device adaptable to be supported on a support structure comprising a base member having front, rear and opposed side wall portions and a floor portion extending therebetween, said floor portion being defined by a plurality of spaced channel portions extending between the front and rear wall portions and a plurality of upstanding wall portions positioned therebetween, a track member positioned extending along each of said channel portions for supporting products positioned thereon, said upstanding wall portions extending between said front and rear wall portions for guiding and maintaining products positioned on said track members in parallel rows therebetween, said floor portion being supported in an inclined position when said device is supported on a horizontal surface such that rows of products positioned between said upstanding wall portions will slide along the respective track members positioned therebetween towards the front wall portion, wall means in each of said channel portions extending downwardly from said floor portion forming at least one cavity therein, each of said cavities defining a space adjacent to the respective track member positioned within said respective channel portions, opening means formed in each of said cavity forming wall means for allowing air to enter said cavities, each of said track members being dimensioned such that uncovered cavity spaces extend along opposite sides thereof when said track members are positioned within said channel portions, said uncovered cavity spaces communicating the space within each of said cavities with the space above said floor portion for allowing air to circulate therethrough and around the products position on said track members, said cavity forming wall means and the front, rear, and opposed side wall portions of said base member being dimensioned to achieve the proper inclination of said floor portion.

4,454,950

COLLAPSIBLE RECEPTACLE FOR STORAGE OF BULK ITEMS

Paul J. Stefanelli, 155 Burger Dr., Crownsville, Md. 21032

Filed Dec. 18, 1981, Ser. No. 332,193
Int. Cl.³ A47F 5/10
U.S. Cl. 211—60 R **9 Claims**



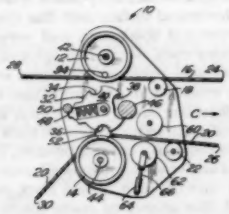
1. A collapsible receptacle for bulk items comprising:
(a) a substantially planar first piece of sheet material having an upper side and a lower side;
(b) a substantially planar second piece of sheet material;
(c) a first hinge means attaching an edge of said second piece substantially across said upper side of said first piece whereby said first and second piece form a substantially V-shaped receiving section;
(d) a substantially planar third piece of sheet material having a pair of ends;
(e) a second hinge means attaching an end of said third piece to said lower side of said first piece whereby said first and said third piece form a substantially V-shaped base, said V-shaped receiving section being substantially larger than said V-shaped base;
(f) a substantially planar closed back piece of sheet material having an upper V-shaped portion and a lower inverted V-shaped portion conforming to said V-shaped receiving section and said V-shaped base, respectively, and means for removably fastening said back piece to said substantially V-shaped receiving section, whereby said V-shaped receiving section has an open front and a closed back.

4,454,951

REMOTE CONTROLLED SLACK PULLING LOG SKIDDING CARRIAGE

Scott L. Kuehn, Missoula, Mont., assignor to Champion International Corporation, Stamford, Conn.

Filed Jun. 16, 1982, Ser. No. 388,886
Int. Cl.³ B66C 21/00, 11/20
U.S. Cl. 212—89 **7 Claims**



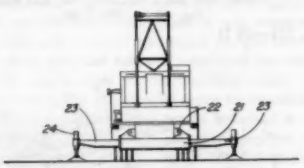
1. In a log carriage for use with a log skidding machine, said carriage adapted to be suspended from a skyline and including a rigid housing defining the outer surface of said carriage, a skyline sheave rotatably mounted in said housing with the perimeter of said skyline sheave adapted to be mounted on and rollable along a skyline, a drag line sheave rotatably mounted in said housing with the perimeter of said drag line sheave adapted to support a drag line, and a line lock for automatically locking said carriage alternately to said skyline and said drag line, the improvement comprising:
a slack-pulling sheave rotatably mounted in said housing;
a hydraulic motor cooperatively engaged with said slack-pulling sheave for rotating said slack-pulling sheave about its centroid;
at least one accumulator for storing and dispensing hydraulic fluid;
a feed tube connecting said at least one accumulator to said hydraulic motor for directing hydraulic fluid from said at least one accumulator to said hydraulic motor for driving said hydraulic motor;
an accumulator valve in communication with said feed tube for selectively starting or stopping the flow of hydraulic fluid from said at least one accumulator to said hydraulic motor;
a hydraulic clutch fixedly attached to said housing and being operative to force said drag line to frictional engagement with said slack-pulling sheave;
a clutch tube extending from said hydraulic clutch to a point on said feed tube intermediate said accumulator valve and said hydraulic motor, said clutch tube directing hydraulic fluid from said at least one accumulator to said hydraulic clutch;
a reservoir in communication with said hydraulic motor for receiving hydraulic fluid from said hydraulic motor;
a recharge tube extending from said reservoir to a point on said feed tube intermediate said accumulator valve and said at least one accumulator; and
a recharge pump in communication with said recharge tube and cooperatively engaged with said skyline sheave, whereby rollable movement of said skyline sheave along said skyline causes rotation of said skyline sheave and whereby rotation of said skyline sheave operates said recharge pump to urge the hydraulic fluid from said reservoir to said at least one accumulator thereby recharging said at least one accumulator.

4,454,952

MEANS OF REMOVABLY MOUNTING AN OUTRIGGER

James R. McGhie, Brampton, Canada, assignor to American Hoist & Derrick Company, St. Paul, Minn.

Filed Jul. 26, 1982, Ser. No. 402,014
Int. Cl.³ B66C 23/62
U.S. Cl. 212—189 **5 Claims**



1. A removable outrigger assembly for a mobile crane or the like, comprising:
(a) a mounting assembly detachably connectable to the chassis of the mobile crane, and disposed transversely thereacross below the chassis at a position between the front and rear wheels of the vehicle when mounted thereon said assembly being connectable to the chassis by removable pin means;
(b) a pair of outrigger arms slidably mounted on the mounting assembly and projecting outwardly therefrom beyond opposite sides of the vehicle;
(c) a jack unit on the end of each of the outrigger arms; and,
(d) a roller and rail system associated with said mounting assembly and the chassis of the vehicle to facilitate removal of the mounting assembly from beneath the vehicle

and positioning the same thereunder, said roller system comprising first and second upper roller units and a first lower roller unit on said mounting assembly, said roller units being spaced apart from one another longitudinally along said mounting assembly and each having rollers located on opposite sides of the mounting assembly and a pair of rails secured to the chassis of the vehicle and extending transversely thereacross at a position therebelow, said rails being spaced apart from one another to receive the mounting assembly therebetween and arranged such that the mounting assembly, after removal of the pin means, must be lowered a selected amount below the chassis of the vehicle before the rollers of the first and second upper roller units engage and rest upon the upper surface of the rails for rolling therealong, the rollers of said lower roller unit being positioned so that they engage the undersurface of the rails after the mounting assembly has rolled a selected amount along the rails and before the rollers of the first upper roller unit disengage the same when removing the mounting assembly from beneath the chassis of the vehicle.

4,454,953

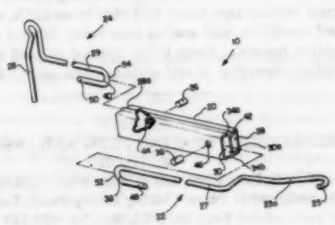
TELESCOPING UNCOUPLING LEVER

Osvaldo F. Chierici, 2138 Pepper Valley Dr., Geneva, Ill. 60134

Continuation-in-part of Ser. No. 330,391, Dec. 14, 1981, abandoned. This application Apr. 6, 1982, Ser. No. 365,968

Int. Cl.³ B61G *1/04, 3/08, 3/14, 3/26*

U.S. Cl. 213—166 **6 Claims**



1. In an uncoupling lever device for a railroad car having a coupler mounted at one end thereof for side to side swinging movement and movement longitudinally of the car in response to buff and draft forces and including a lock lifter for uncoupling the coupler, with said uncoupling device including a lever assembly comprising a lock lifter section including a hook eye portion at the distal end thereof adapted to operatively engage the lock lifter for support by the coupler, a handle section including a handle portion at the distal end thereof adapted to be pivotally secured to the car to one side of the end of the car to swing about a pivot point to move said hook eye portion to operate said lock lifter, for mounting the lever assembly in operative relation on the car, and an elongate housing telescopingly receiving the proximal end of said sections in substantially parallel relation, with said lever sections being in torque transmitting relation to said housing,

the improvement wherein:

said housing comprises:

an elongate sleeve defining within same and extending longitudinlly thereof a pair of channels in substantially parallel relation and each defining a slideway surfacing therealong formed from a polymer having self-lubricating characteristics,

said sleeve defining outboard and inboard ends of said housing at the respective ends of said sleeve,

said device sections each comprising a rectilinear bar shaft integral with a U-shaped retainer at the respective proximal ends thereof,

with said retainer portions of each of said device sections defining a U-bend and a free end length spaced laterally of and substantially paralleling the shaft thereof and extending in the direction of the distal end thereof and below said bar shaft thereof,

with said bar shaft and said retainer portion thereof said handle section being slidably received in one of said sleeve channels for free sliding movement longitudinally thereof with said handle portion of said handle section being movable therewith toward and away from said housing outboard end,

and said bar shaft and said retainer portion thereof of said lock lifter section being slidably received in the other of said channels for free sliding movement longitudinally thereof with said hook eye portion of said lock lifter section being movable therewith toward and away from said housing inboard end,

a first stop pin fixed across said sleeve one channel transversely thereof adjacent the outboard end of said housing and positioned to be disposed between the paths of movement of said handle section bar shaft and said free end length of same with said handle section U-bend disposed in said one sleeve channel inboard of said first stop pin,

a second stop pin fixed across said sleeve other channel transversely thereof adjacent the inboard end of said housing and positioned to be disposed between the paths of movement of said lock lifter section bar shaft and said free end length of same, with said lock lifter section U-bend disposed in said sleeve other channel outboard of said second stop pin,

said handle section and said lock lifter section being proportioned lengthwise of said sleeve for positioning of, in the retracted relation of the lever, said handle section handle portion at said outboard end of said housing, and said lock lifter section hook eye portion at said inboard end of said housing, with the respective handle section and lock lifter section free end lengths substantially remaining in torque transmitting relation with said sleeve within their respective channels,

said handle section and said lock lifter section being proportioned lengthwise of said sleeve for positioning of, in the maximum extended relation of the lever, said handle section retainer portion in stopped relation with said first stop pin adjacent said outboard end of said housing and said lock lifter section retainer portion in stopped relation with said second stop pin adjacent said inboard end of said housing, with the respective handle section and lock lifter section free end lengths substantially remaining in torque transmitting relation with said sleeve within their respective channels,

and with said handle section bar shaft and said free end length thereof riding on said surfacing of said one channel lengthwise thereof for antifrication bearing engagement of both said handle section bar shaft and said free end length thereof thereagainst,

and with said lock lifter section bar shaft and said free end length thereof riding on said surfacing of said other channel lengthwise thereof for antifriction bearing engagement of both said lock lifter section bar shaft and said free end length thereof thereagainst.

4,454,954

BALL HOUSING FOR A NONREFILLABLE POUR FITMENT

W. Coy Willis, Hagerstown, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 28, 1983, Ser. No. 470,477

Int. Cl.³ B65D *49/02*

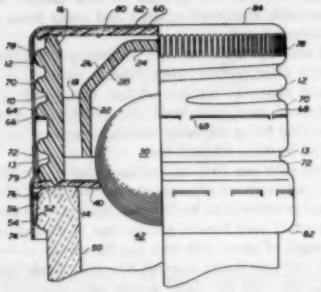
U.S. Cl. 215—21 **15 Claims**

1. A one-piece housing for a ball in a nonrefillable pour fitment for assembly with a bottle having an open mouth to prevent fraudulent refilling of the bottle, the housing comprising:

a hollow cylinder adapted for coaxial assembly with a bottle,

the cylinder having a side wall, a receiving end for disposition toward the bottle interior, and a dispensing end for disposition away from the bottle interior;

a ball enclosure having a central axis, a cup-shaped wall adapted to accommodate and retain a ball within the space surrounded by the wall, and an open end defined by a



portion of the cup-shaped wall, said enclosure coaxially disposed within said cylinder with the open end of said enclosure disposed away from the dispensing end of said cylinder and spaced apart from the side wall of said cylinder by a plurality of bridges integrally connecting portions of the cylinder side wall with wall portions of said enclosure.

4,454,955

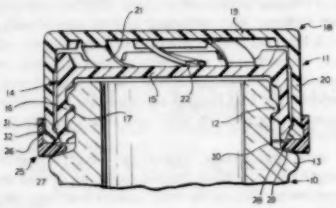
CHILD RESISTANT PACKAGE

Maximillian Kusz, Waterville, and William E. Fillmore, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jul. 11, 1983, Ser. No. 512,837

Int. Cl.³ B65D *55/02*

U.S. Cl. 215—220 **32 Claims**



1. A child-resistant package comprising

a container having an exterior thread means,

said container including an annular bead spaced below the thread means,

an inner cap member having a top panel integrally formed with a depending skirt portion,

said depending skirt portion having thread means formed on the interior surface thereof for engagement with the thread means on the container,

an outer member having a peripheral skirt portion surrounding the skirt portion of the inner cap member,

interengaging means between said inner cap member and said outer closure member operable upon relative axial movement between said members to interengage said members such that rotation of said outer member will also rotate said inner member to disengage the thread means of said inner member from the thread means of a container,

and a tamper-indicating member comprising an annular ring having portions extending between the lower edge of the skirt portion of the outer closure member and a portion of the container and operable to normally prevent axial movement of the outer closure member.

4,454,956

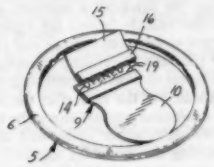
TAMPER INDICATING COMPOSITE TAPE CLOSURE

Richard A. Patterson, Woodbury, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed May 16, 1983, Ser. No. 494,854

Int. Cl.³ B65D *41/32*

U.S. Cl. 220—214 **7 Claims**



1. A tape closure for a can end formed of metal and having a pour opening, said closure comprising an exterior closure tape having a portion thereof adapted to adhere to the can end and cover a said pour opening, one end of said exterior tape being free of the can end, means on said free end defining a pull tab, said exterior closure tape being folded to form a plait in the tape to shorten said free end, and a sealing tape adhered to said exterior closure tape along said plait to maintain said tape in a folded condition, said sealing tape being formed to tear upon excessive tensional force being applied to said pull tab in a direction transverse to said plait to open said plait.

4,454,957

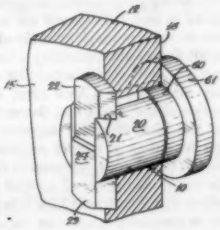
SELF-LOCKING SEALING PLUG AND INSTALLING METHOD

Horst Kwech, Lake Bluff, and R. Jon Stouky, Grayslake, both of Ill., assignors to Power Cutting Incorporated, Lake Bluff, Ill.

Filed Dec. 20, 1982, Ser. No. 451,110

Int. Cl.³ B65D *45/28*

U.S. Cl. 220—323 **14 Claims**



1. A sealing device comprising, a first cylindrical body member having a pair of releasably-latched extendable locking members at an end thereof which can extend radially beyond the perimeter of said first body member, a second cylindrical body member of the same diameter as the first body member and having a larger-diameter sealing flange at an end thereof, means mounting the body members one on the other for relative movement therebetween, locking means carried on the second body member for holding the locking members latched in retracted position and movable to a releasable position by separating movement of the body members, and means for drawing the body members toward each other to draw the extended locking members and sealing flange toward each other and into compressive engagement with the faces of a

wall having an opening into which the sealing device may be positioned.

4,454,958

INVIOLABLE COVER FOR A VESSEL APERTURE

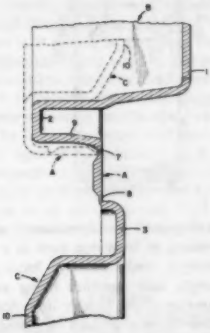
Jacques Juillet, Choisy le Roi; Eugenio Olmi, Longueville, and Michel Stephan, Versailles, all of France, assignors to Le Moulage Automatique, Clamart, France

Filed Aug. 2, 1982, Ser. No. 404,447

Claims priority, application France, Aug. 11, 1981, 81 15503

Int. Cl.³ B65D *43/14, 51/04*

U.S. Cl. 220—339 **5 Claims**



1. A cover for a vessel aperture comprising a frame adapted to be sealed or otherwise affixed to the edge of said vessel aperture, a cover adapted to fit into said frame in closed position, and characterized in that said frame and said cover are connected by a zone of liaison, said zone of liaison comprising a double hinge formed from a single element interdependent with said frame and said cover, said frame is in the form of a concave hollow basin, said cover is in the form of a convex basin, the contours of said concave basin and said convex basin are shaped so that said convex basin can be fitted by means of a tight and close adjustment into the upper part of said concave basin, and said concave basin has greater depth than that of said convex basin in order to create in the closed position a space between the floor of said cover basin and the hollowed floor of said frame basin.

4,454,959

TRANSPORT CONTAINER FOR TRANSPORTING HOT PARTICULATE MATERIALS

Karl Schmid, Essen, and Bernhard Heinrichs, Wattenscheid, both of Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

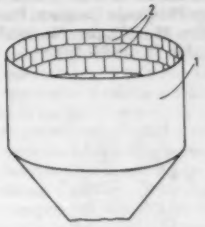
Filed Feb. 26, 1982, Ser. No. 352,842

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1981, 3108149

Int. Cl.³ B65D *90/04*

U.S. Cl. 220—400 **12 Claims**

1. A transport container for transporting hot coke, comprising a wall bounding an inner chamber for accommodating a hot particulate material and having an inner side and a substantially upright axis; a lining arranged at said inner side of said wall and composed of a plurality of readily removable and exchangeable lining members of a material suitable for withstanding high mechanical and thermal loads; and holding means provided on said inner side of said wall and having a plurality of openings, so that each of said lining members releasably engages in a respective one of said openings and is thereby held by said holding means, said holding means including a plurality of holding members located under each other and extending in a transverse direction, said openings being



formed in each of said holding members and spaced from one another in the circumferential direction.

4,454,960

DRAW-IRONED CAN FORMED OF SURFACE-TREATED STEEL PLATE AND PROCESS FOR PREPARATION THEREOF

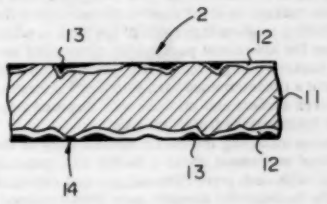
Katsuhiro Imazu, and Toshiaki Watanabe, both of Yokohama, Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Oct. 28, 1981, Ser. No. 315,951

Claims priority, application Japan, Nov. 1, 1980, 55-152980; Aug. 10, 1981, 56-124038

Int. Cl.³ B65D *90/04*

U.S. Cl. 220—456 **9 Claims**



1. A draw-ironed can obtained by subjecting a surface-treated steel plate to draw-ironing, which consists of a relatively thick bottom portion and a relatively thin barrel portion and has no seam in a joint portion between the barrel portion and bottom portion, wherein said surface-treated steel plate is a bright plate obtained by fusing tin on an electrically tin-plated steel plate, the barrel portion has a surface layer containing tin in an amount of 0.01 to 1.70 g/m², the surface layer comprises a tin-iron alloy layer having an exposed area ratio (SA) of from 25% to 80%, and the surface layer of the bottom portion consists substantially of a tin-plate cover layer in an amount of tin of 0.05 to 2.80 g/m², and said exposed area ratio (SA) is defined by the following formula:

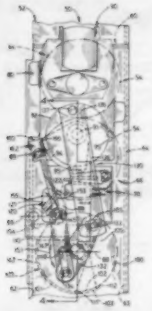
$$SA(\%)=0.21\times hs$$

wherein hs stands for the peak height (μA/cm²) of the tin-iron alloy layer of the sample appearing at about −1150 mV in a polarization curve obtained by dipping the sample in a 0.05 N aqueous solution of anhydrous sodium carbonate having the pH value adjusted to 9.5 by sodium hydrogen-carbonate, and effecting polarization first from −200 mV to −1450 mV, then from −1450 mV to +550 mV and finally, from +550 mV to −1300 mV.

4,454,961
PACKAGE DISPENSING MECHANISM FOR VENDING MACHINE

Spencer L. Childers, and Herman R. Craven, both of Fresno, Calif., assignors to The Vendo Company, Fresno, Calif.

Filed Nov. 26, 1982, Ser. No. 444,744
Int. Cl.³ B65G 59/06
U.S. Cl. 221—266 11 Claims



1. A package dispensing mechanism for use in a vending machine adapted to contain an upright stack of packages and deliver the packages therein gravitationally and successively to the mechanism with the lowermost package in the stack disposed at a predetermined location, the packages having a maximum predetermined width transversely of the stack, and the mechanism comprising:

A. a gate disposed at such location;

B. means mounting the gate for movement between a blocking position, in which the gate is engaged with the lowermost package to block downward movement thereof, and a feeding position at one side of the stack in which the gate frees the lowermost package for downward movement;

C. a bucket having a side wall, which is generally arcuate about a predetermined axis, provides a concave surface, a convex surface and an open side disposed oppositely of the inner surface from such axis;

D. means mounting the bucket downwardly of the gate for pivotal movement about a bucket axis generally coincident with such predetermined axis and extended substantially horizontally beneath such predetermined location, the bucket being movable about the pivotal axis between a receiving position, in which such open side is upwardly disposed for reception of such lowermost package from the stack through the open side and onto the concave surface, and a discharging position in which the open side is downwardly disposed for dispensing a package downwardly from the concave surface and in which the convex surface is disposed beneath such predetermined location to block movement of a package therefrom into the bucket; and

E. means for motivating the gate and the bucket sequentially and cyclically through

(1) a first relative disposition in which the bucket is in the discharging position for release of a package previously received therein and the gate is in the blocking position so as to support the stack upwardly of the bucket,

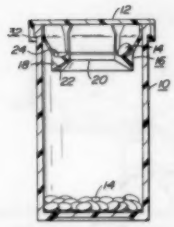
(2) a second relative disposition in which the bucket is in the discharging position and the gate is in the feeding position for movement of the stack downwardly until the lowermost package engages such concave surface, and

(3) a third relative disposition in which the bucket is in the receiving position and the gate is in the blocking position so that, as the gate and the bucket move from the second disposition into the third disposition, the lowermost package is received from the balance of the stack onto the concave surface while the gate moves into the blocking position to engage the package immediately upwardly of such package.

4,454,962
INSERTABLE DISPENSER

Donald J. Greenspan, 235 Pavilion Ave., Riverside, N.J. 08075

Continuation-in-part of Ser. No. 228,636, Jan. 26, 1981, abandoned. This application Dec. 15, 1981, Ser. No. 330,934
Int. Cl.³ G01F 11/26
U.S. Cl. 221—288 4 Claims

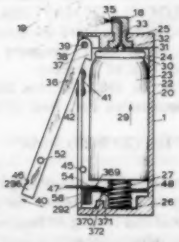


1. An insertable dispenser for insertion of an opening in a container for dispensing at least one item at a time from the container, comprising a body member having at least one aperture therethrough, said aperture being at least slightly larger than the diameter of the largest item desired to be dispensed, said member having a shelf disposed on the outer surface of said member and said member having a lip with at least a portion thereof being flexible, said lip being comprised of a plurality of separated sections and being disposed along the outer periphery of said member at a substantially common axial position so as to have an outer diameter greater than the outer diameter of said member, said lip engaging the interior of the container in a friction fit adjacent said container opening, for snugly holding the member within the container, said shelf and said lip cooperating to form a substantially continuous supporting surface for receiving and supporting items which pass through said aperture for dispensing from the container.

4,454,963
FLUID DISPENSING ANTI-BURGLAR DEVICE

Charles R. Fegley, 1606 Frush Valley Rd., Reading, Pa. 19605

Filed Dec. 14, 1981, Ser. No. 330,560
Int. Cl.³ B67B 7/28
U.S. Cl. 222—5 30 Claims



1. A fluid dispensing anti-burglar device for use with a pressurized container, the device comprising:

(a) a body member;

(b) means for supporting said pressurized container in said body member, wherein said pressurized container has a fluid-dispensing element adapted to release fluid under pressure from said pressurized container when actuated;

(c) a passageway in said body member having an entry section at one end thereof;

(d) dispensing element-actuating means mounted in said body member and adapted to engage and actuate said fluid-dispensing element;

(e) spring means biased to force said fluid-dispensing element and said dispensing element-actuating means into engagement with each other, thereby causing said fluid-dispensing element to be actuated;

(f) trigger means adapted to releasably retain said spring means in a cocked position in which said fluid-dispensing element and said dispensing element-actuating means are separated from each other;

(g) trigger retaining means associated with said trigger wherein said trigger retaining means comprises a thermoplastic cord having at least one protrusion formed on it for securing said thermoplastic cord to a structure having a slot formed in it which is narrower than the protrusion, the cord being insertable into the slot and held in position by the protrusion whereby said thermoplastic cord is arranged to releasably retain said trigger.

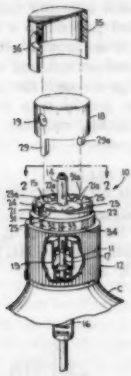
(h) and trigger-actuating means that separates or deforms said cord by heat associated with said trigger to actuate said trigger upon the application of an electric current to said trigger-actuating means, whereby said spring is released from its cocked position causing said fluid-dispensing element to be actuated, and fluid under pressure is released from said container to pass through said passageway.

4,454,964

ADJUSTABLE STROKE DISPENSING PUMP

Robert F. Sacher, Walnut, Calif., assignor to Calmar, Inc., City of Industry, Calif.

Filed Oct. 28, 1981, Ser. No. 315,899
Int. Cl.³ B67D *5/22*; G01F *11/06*
U.S. Cl. 222—43 **3 Claims**



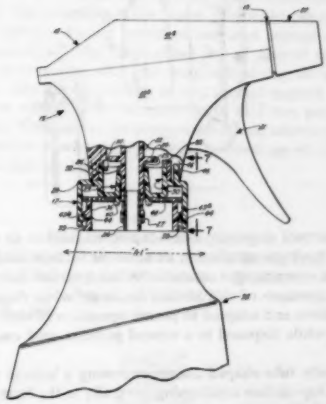
1. An adjustable stroke dispensing pump, comprising a closure cap adapted to be secured to a container of flowable product to be dispensed, end wall means on said cap including a central hub having a central opening, a piston and cylinder unit secured to said cap and including a spring biased hollow plunger extending outwardly through said central opening and being rotatable about the central axis thereof, said cap having an integral, annular extension surrounding said hub and concentric with said plunger, a separate ring concentric with said plunger and being mounted between said hub and said annular extension, said ring having circumferentially spaced, inwardly opening axial grooves therein defining ring segments therebetween, said grooves and said ring segments lying along a circle concentric to said central axis, said grooves having bottom ends defining limit stops located at different axial distances relative to said plunger and being located inwardly of an upper surface of said ring, a plunger head containing a discharge passage frictionally engaging an outer terminal end of said plunger for rotation together therewith about said central axis, at least one axially extending leg depending from a lower edge of said plunger head in axial alignment with said circle so as to be thereby in axial alignment with a selected one of said grooves and a selected one of said ring segments upon a selected rotative orientation of said head relative to said cap, said leg having an outer surface flush with the outer surface of said plunger head, a terminal end of said leg defining an abutment in engagement with one of said ring segments when said head is selectively rotated relative to said cap for preventing plunger reciprocation during conditions of storage and/or non-use, said abutment engaging one of said limit stops for varying the output of product from the container when said head is selectively rotated to align said leg with said selected one of said grooves.

4,454,965

CHILD-RESISTANT TRIGGER PUMP DISPENSER

Donald C. Kirk, Jr., Midlothian, Va., assignor to Ethyl Products Company, Richmond, Va.

Filed Aug. 27, 1981, Ser. No. 297,009
Int. Cl.³ B67B *5/00*; B67D *5/42*
U.S. Cl. 222—153 **6 Claims**



1. A pump for dispensing fluids from a non-cylindrical container that has a major transverse axis and a threaded neck portion, said pump comprising:

(a) a pump housing having a vertically disposed lower housing member with a fluid inlet at its lower end, and is fixedly attached at its upper end to an elongated upper housing member which has its major axis transverse to said lower housing and which has a fluid outlet at one end thereof;

(b) fluid pumping means for pumping fluid from said fluid inlet through said fluid outlet;

(c) closure means fixedly connected to said lower end of said lower housing member, said closure means having a downwardly extending skirt portion that is provided with at least two thread members on its interior wall, which thread members have upwardly extending projections at their leading ends which are adapted to be received in notches provided in the underside of said threads on said neck portion;

(d) cooperating orienting means provided on said closure means and said lower end of said lower housing member adapted to be engaged by relative rotation between said

closure means and said lower end of said lower housing member prior to fixedly connecting said closure means to said lower end of said lower housing member;

(e) means fixedly connecting said closure means to said lower end of said lower housing, said means being applied after said cooperating orienting means are engaged;

(f) said threads on said neck portion and said threads on said closure skirt being so positioned with respect to each other after said closure means is fixedly connected to said lower end of said lower housing that when said upwardly extending projections on said threads on said closure skirt are received in said notches in said threads on said neck portion, the major axis of said upper housing member is substantially aligned with said major transverse axis of said non-cylindrical container; and

(g) resilient means to maintain engagement between said notches on said threads on said neck portion and said projections on said thread members on said closure means.

4,454,966

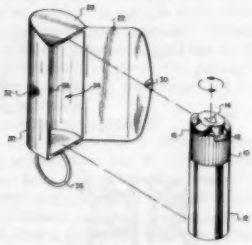
AEROSOL DISPENSER CASE

Sonja L. Hicks, 3608 Springbrook, Dallas, Tex. 75205

Filed Nov. 27, 1981, Ser. No. 325,284

Int. Cl.³ B67B *5/00*

U.S. Cl. 222—153 **4 Claims**



1. An aerosol dispenser case adapted to receive an aerosol dispenser having a nozzle and an actuator surface, said actuator surface comprising a rotatable inclined surface adapted to preclude operation of said aerosol dispenser while disposed in a first position and adapted to permit operation of said aerosol dispenser while disposed in a second position, said case comprising:

a generally tube-shaped container having a bottom surface and a top surface conforming generally to the form of said aerosol dispenser;

a first aperture disposed in a side of said tube-shaped container for receiving said aerosol dispenser;

means for rotating said actuator surface from said first position to said second position upon insertion of said aerosol dispenser into said first aperture; and

a second aperture within said container disposed adjoining to said nozzle of said aerosol dispenser,

wherein said top surface comprises a flexible membrane conforming substantially to and inclined parallel with said actuator surface and adapted to permit actuation of said aerosol dispenser while said aerosol dispenser is disposed within said container.

4,454,967

DRIP PREVENTER

Michael A. Carr, 685 - 4th Ave. S., Carrington, N. Dak. 58421

Filed Apr. 19, 1982, Ser. No. 369,661

Int. Cl.³ B65D *37/00*

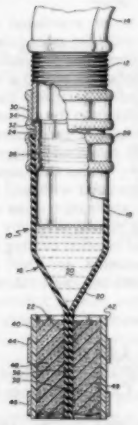
U.S. Cl. 222—213 **9 Claims**

1. A drip retainer, for attachment to a downwardly extending spout through which liquid intermittently passes under pressure, for retaining liquid not under pressure, the drip retainer comprising:

a resilient tubular member of a size of retain liquid dripping from the spout, the tubular member being flattened at its lower end wherein opposite lower walls of the tubular member are biased together;

means to connect the upper end of the tubular member to the spout in a liquid-tight manner;

hollow clamp means mounted on the lower end of the tubular member in generally surrounding relation to the flattened portion of the tubular member; and



resilient biasing material within the clamp means on both sides of the flat portion biasing the walls of the tubular element together in such a manner that the biasing material urges the flattened portion to a closed position in which residual liquid in the spout is prevented from passing through the flattened portion, and wherein the biasing material allows passage through the tubular member of liquid under pressure greater than that resulting from residual liquid in the tubular member.

4,454,968

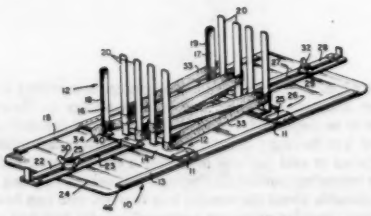
APPARATUS FOR WINDING FILAMENTS

John J. StLawrence, 99 Leighton St., Lynn, Mass. 01904

Continuation-in-part of Ser. No. 263,672, May 14, 1981, abandoned. This application Nov. 4, 1981, Ser. No. 318,006

Int. Cl.³ A41H *43/00*

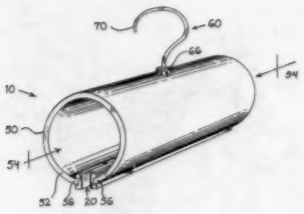
U.S. Cl. 223—46 **9 Claims**



1. A filament winder comprising, a support member and at least two rows of upstanding spindles thereon, at least one of said rows of spindles being mounted on a moveable base, guide means to channel movement of said base and its spindles on said support member and clamping means for securing said base and its spindles in a desired position on said support mem-

ber and means to secure said other row of spindles for winding a filament thereon.

4,454,969
HANGER ASSEMBLY
John W. Huth, 411 Crest Dr., Cary, Ill. 60013
Filed Jun. 9, 1981, Ser. No. 271,137
Int. Cl.³ A47J *51/142*
U.S. Cl. 223—96 **3 Claims**



1. A hanger assembly for simplified hanging of clothes and spacing of clothes from adjacent hangers comprising:

a. a clamping means for holding said clothes;

b. a separate clamp locking means for locking said clamping means to said clothes, and for spacing of said clothes from an adjacent member of said hanger assembly;

c. said clamping means further comprising a first clothes holding member and a second clothes holding member;

d. said first clothes holding member and said second clothes holding member each having a first end and a second end oppositely disposed from said first end;

e. said first end of said first clothes holding member adjacent said first end of said second clothes holding member and said second end of said first clothes holding member adjacent said second end of said second clothes holding member;

f. said first end of said first clothes holding member being secured to said first end of said second clothes holding member;

g. said clamp locking means includes a tubular member having therein a slotted clamp contact for contacting said clamping means in the side of said tubular member parallel to a tubular axis of said tubular member being removably and slideably mountable on said clamping means to lock said clothes between said first clothes holding member and said second clothes holding member;

h. said clamp locking means being of sufficient size to space said hanger assembly from an adjacent hanger assembly;

i. a hanging means diametrically opposed to said slotted clamp contact and centrally located in the wall of said tubular member;

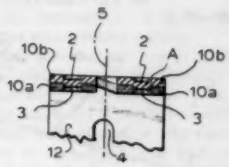
j. said first clothes holding member having a first interior clothes contacting surface and a first exterior clamp lock mating surface oppositely disposed therefrom;

k. said second clothes holding member having a second interior clothes contacting surface and a second exterior clamp lock mating surface oppositely disposed therefrom;

l. said first interior clothes contacting surface being adjacent said second interior clothes contacting surface and being separable therefrom by said clothes being inserted therebetween; and

m. said first exterior clamp lock mating surface and second exterior clamp lock mating surface both include a clamp lock receiving slot for receiving said clamp locking means.

4,454,970
SUPPORTING ARRANGEMENT
Michael Krauser, Germering, Fed. Rep. of Germany, assignor to Krauser KFZ-Zubehör-Vertriebs GmbH, Mering, Fed. Rep. of Germany
Filed Aug. 19, 1981, Ser. No. 294,177
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1980, 3032312
Int. Cl.³ B62J *11/00*
U.S. Cl. 224—39 **11 Claims**



1. A supporting arrangement particularly for connecting support elements for mounting bags on a motorcycle, comprising two brackets connected to each other by connecting means, each of said brackets having an L-shape and including a longitudinal leg and a transverse leg, said longitudinal leg having an elongated slot to receive said connecting means and including a first elongated portion and a second elongated portion, said first and second portions being offset relative to each other and extending in the planes parallel to one another, said first portion having openings and said second portion having projections, the longitudinal leg of one of said two brackets cooperating with the longitudinal leg of another bracket so that the projections of said second portion of said one bracket engage with the openings of said first portion of said another bracket and the projections of said second portion of said another bracket engage with the openings of said first portion of said one bracket.

4,454,971
PROJECTILE MAGAZINE
Paul W. Poehlmann, P.O. Box 487, Stinson Beach, Calif. 94970
Filed Aug. 9, 1982, Ser. No. 406,365
Int. Cl.³ B65D *83/04*
U.S. Cl. 224—196 **7 Claims**

5. A projectile magazine for use with an elongated projectile having two ends a predetermined distance apart comprising a base plate, a drum having a number of parallel openings extending through said drum for more than said predetermined distance, means for mounting said drum to turn on said base plate about an axis parallel to said openings, and a ramp on said base plate in position to be engaged by one of said ends as said drum turns on said base plate and to move said projectile in

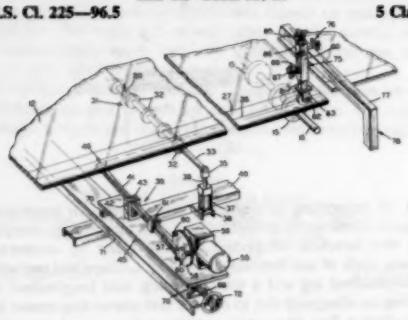
said drum to position the other end of said projectile out of said drum.

4,454,972

METHOD OF AND APPARATUS FOR SEVERING GLASS

Robert E. Maltby, Jr., Wayne, and James T. Sikorski, Rossford, both of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Apr. 15, 1982, Ser. No. 368,678
Int. Cl.³ C03B *33/02*
U.S. Cl. 225—96.5 **5 Claims**



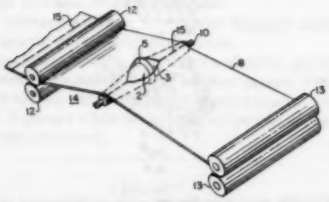
1. Apparatus for facilitating the removal of marginal edges from relatively thick glass bodies comprising: means for advancing a thick body of glass in a generally horizontal path; means along said path for scoring one surface of said glass body along at least one longitudinal line spaced inwardly from one of the longitudinal edges of said body; means downstream of said scoring means for partially fracturing the glass body along said score comprising a tapper assembly including a support plate, an elongated rod pivotally mounted about a horizontal axis on said plate, and an impact head rigidly secured at one end of said rod and intermittently engageable under the influence of force with the glass body surface opposite said score in general vertical registry therewith; and means downstream of said fracturing means for severing said glass body along said score line as said body of glass advances in said horizontal path.

4,454,973

PERFORATION BURST CONE DEVICE

Robert Irvine, Riverside, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 26, 1982, Ser. No. 444,569
Int. Cl.³ B65H *35/10*
U.S. Cl. 225—100 **9 Claims**



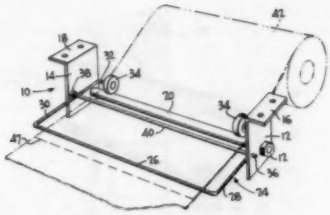
1. A bursting apparatus for separating sheets in a continuous intermittently perforated form web comprising: feed roller means, burst roller means and a bursting device, said bursting device disposed between said feed roller means and said burst roller means and comprising two horizontally positioned cone sections wherein their base portions are adjacent to each other and are encircled at least in part by a bursting ring, said bursting ring has a portion extending beyond said cone base portions in at least a portion of its outer periphery.

4,454,974

PAPER TOWEL REGULATOR AND DISPENSER

Allister B. Cooke, Santa Barbara, Calif., assignor to CCT Associates, Bethesda, Md.

Filed Apr. 16, 1982, Ser. No. 369,002
Int. Cl.³ B26F *3/02*; B65H *35/10*
U.S. Cl. 225—106 **18 Claims**



1. A paper towel regulator adapted for mounting in close proximity to a paper towel roll and in the dispensing path thereof, said regulator comprising:

(A) mounting bracket means;

(B) a friction beam fixed to said mounting bracket means and disposed in said path transverse to said paper towels;

(C) a lever bar assembly mounted in said mounting bracket means and having an elongated bar portion disposed transverse to said path, an arm at each end of said bar portion extending parallel to said path, and a second bar means at the end of the arms;

(D) friction pad means fixed to said second bar means;

(E) said lever bar assembly being pivotally mounted in said mounting bracket means with the fulcrum being so disposed along said arms that said assembly is normally counterbalanced with said bar portion hanging downwardly and, when said bar portion is pivoted upwardly, said friction pad means contacts said friction beam;

(F) whereby when said paper towels coming off said roll, which have been threaded over said friction beam and under said bar portion, are pulled downwardly, they freely unroll, but when they are pulled upwardly they contact said bar portion pivoting the same upwardly and pivoting said friction pad means downwardly to form a nip with said friction beam, thereby clamping said paper towels to prevent unrolling and allow tearing the same off the roll.

4,454,975

SHEET-FEED TRACTOR PROVIDING PIN OR FRICTION FEED

Neil A. Rosenberg, Hollis, N.H., assignor to Integral Data Systems, Inc., Milford, N.H.

Filed Jul. 7, 1982, Ser. No. 396,001
Int. Cl.³ G03B *1/30*
U.S. Cl. 226—74 **17 Claims**

1. A sheet-feed tractor for both pin feed and friction feed of a web to be advanced, the tractor comprising:

A. a frame;

B. a drive shaft journaled in said frame for rotation about its axis and adapted to be rotated by a drive means;

C. a pin-feed assembly

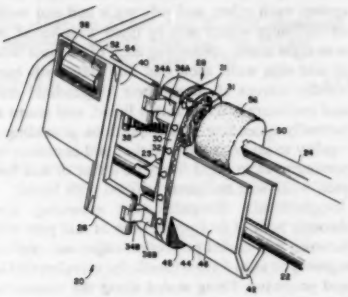
(i) including a multiplicity of pins that engage in perforations of an edge-perforated web,

(ii) mounted in said frame for travel of said pins along an endless path, and

(iii) driven by said drive shaft to advance said web upon rotation of said drive shaft;

D. a drive roller mounted on said drive shaft for driving thereby to rotate therewith and providing a peripheral friction surface spaced axially of said drive shaft from said pins;

E. a web-retention door mounted on said frame for pivoting between a closed position, in which said door retains said web in engagement with said pins, and an open position, in which said door is spaced from said pins and said peripheral surface of said drive roller to permit insertion and removal of said web;



F. an idler roller providing a peripheral surface, rotatably mounted in said web-retention door, and located so that, when said door is in its closed position, said idler roller is disposed opposite said drive roller to provide a nip through which said drive roller feeds said web, said rollers being shaped to continuously engage the web disposed between them and thereby continuously feed the web upon continuous rotation of said drive shaft, said tractor thereby being operable for both pin feed of edge-perforated paper and friction feed of other paper.

4,454,976

ENDLESS TYPE TAPE CASSETTE

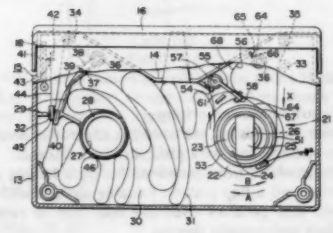
Kenzo Saito, Izumi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 21, 1981, Ser. No. 256,056

Claims priority, application Japan, Apr. 25, 1980, 55-55877[U]; Sep. 10, 1980, 55-128619[U]

Int. Cl.³ B65H *17/42, 17/50*; G11B *15/56*

U.S. Cl. 226—118 **19 Claims**



1. A tape cassette comprising;

a cassette body consisting of an upper half case and a lower half case which are mated with each other, and having a front opening;

a front lid pivotally movably secured to said cassette body and adapted to assume an open position and a close position with respect to said front opening;

a tape drawing reel rotatably mounted in a portion displaced to one side from the center of said cassette body;

a tubular guide mounted in a portion displaced to the other side from the center of said cassette body in a line-synmetrical relation to said tape drawing reel with respect to the central axis of the cassette body;

a tape accumulating portion defined by a partition wall provided adjacent to said tubular guide in the other side position of said cassette body, and by said tape drawing reel;

a flexible, endless tape contained in a folded or meandering fashion in said tape accumulating portion;

a tape discharge gate provided midway of a tape passage leading from said tape accumulating portion to the exterior of said tape cassette body; and

a pair of elastic strips elastically supported on said lower half case of said cassette body in an elastically contacting and opposing relation to each other, with free ends thereof facing said tape discharge gate, whereby said endless tape is caused to pass through the free ends of said pair of elastic strips.

4,454,977

PROCESS OF PRODUCING CORROSION-RESISTANT TUBULAR CONNECTION PIECES

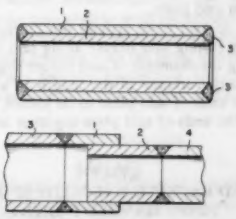
Fritz Aldinger, Rodenbach; Harry Heinke, Erlensee; Franz Schreiber, and Waltraud Werdecker, both of Hanau, all of Fed. Rep. of Germany, assignors to W. C. Heraeus GmbH, Hanau, Fed. Rep. of Germany

Filed Apr. 13, 1982, Ser. No. 367,912

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1981, 3115393

Int. Cl.³ B23K *31/02*

U.S. Cl. 228—131 **4 Claims**



1. Process of producing a tubular connection piece for connecting a pipe of a first material to a pipe of a second material not readily weldable to said first material, said first material being a substance selected from the group consisting of titanium, zirconium, niobium and tantalum, with or without minor alloy additions, and said second metallic material being a substance selected from the group consisting of steels, nickel, nickel alloys and cobalt alloys, said method comprising the steps of:

preparing a connection tube blank by fitting a tubular piece of said first material between two longer tubular pieces of said second material closely fitting respectively the outside and the inside surfaces of said tube of said first material of said tubular piece of said first material, so that the ends of said pieces of said second material extend beyond corresponding ends of said tubular piece of said first material, and welding together the adjacent ends of said pieces of said second material to produce a gas-tight seal;

isostatically hot-pressing said connection tube blank in a pressure vessel;

removing at least part of the welded end portions of said hot-pressed composite tube extending beyond the portion which encloses a tubular layer of said first material and also removing the outer tubular layer of said second mate-

rial substantially entirely from the hot-pressed connection tube, and

thereafter removing an annular section of the remainder of the hot-pressed tube which consists of said first material at one end and removing an annular section of the end portion of the remainder of the hot-pressed tube which consists of said second material at the other end of the hot-pressed tube.

4,454,978

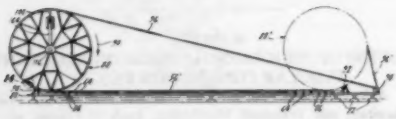
PROCESS FOR IMPROVED MANUFACTURE OF SHELLS FOR TUNNEL TUBES

Joseph J. Schneider, Kanata, Canada, and Robert A. Kaucic, Newark, Del., assignors to AMCA International Corporation, Hanover, N.H.

Division of Ser. No. 256,728, Apr. 23, 1981, Pat. No. 4,406,150. This application May 3, 1983, Ser. No. 491,250

Int. Cl.³ B21D *39/00*

U.S. Cl. 228—151 **16 Claims**



1. A process for manufacture of tunnel tube modules comprising the steps of:

(a) forming a flat rectangular-shaped steel plate substantially in the size required to form a rolled-up cylindrical-shaped tunnel module shell,

(b) positioning said plate on a horizontally-disposed roll-up table,

(c) positioning a collapsible cylindrically-shaped roll-up fixture on said plate,

(d) rolling up said plate around the circumference of said fixture by rolling said fixture along said roll-up table,

(e) adjusting the diameter of said fixture slightly to compensate for any variance in the length of said plate and to allow the ends of said plate to be joined, and

(f) joining the ends of said plate together to form a tube.

4,454,979

LAMINATED PACKING BAG WITH SPOUT FORMED FROM HANDLE PORTION

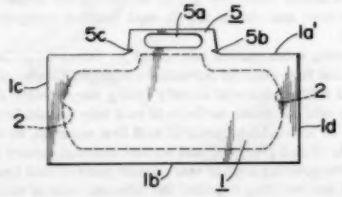
Masaomi Ikeda, and Yotaro Tsutsumi, both of Yokohama, Japan, assignors to Toyo Seikan Kaisha Ltd., Tokyo, Japan

Filed Aug. 25, 1981, Ser. No. 296,057

Claims priority, application Japan, Sep. 5, 1980, 55-122217; Nov. 12, 1980, 55-160731[U]

Int. Cl.³ B65D *5/46, 5/72, 5/70*

U.S. Cl. 229—52 B **8 Claims**



1. A free-standing manually portable container for carrying liquid, comprising:

a pair of coextensive heat fusible flexible side walls formed from integral sheets, each having opposite longitudinally extending side edges and opposite laterally extending side edges, said side walls being heat sealed face-to-face along said longitudinally extending side edges except along a continuous segment thereof, to form longitudinally extending sealed portions, said side walls having coextensive laterally outwardly extending projections projecting from said longitudinally extending side edges at said continuous segment sealed along the laterally outer edges thereof to form sealed projection edges;

a pair of end walls connected along their edges to said side walls adjacent said laterally extending side edges so as to fold inwardly at opposite longitudinal ends of said side walls between said side walls along a central laterally extending fold line when said side walls are flattened against each other, said side walls and end walls forming an enclosure which may be filled with liquid; and

non-straight seams connecting each of said end walls to each of said side walls such that said side walls become outwardly convex all along their longitudinal extent when said enclosure is filled with a liquid, said seams and longitudinally extending sealed portions providing sufficient rigidity to said container so that said container is self-supporting so as to stand freely on either of said longitudinal ends when said enclosure is filled with liquid;

a longitudinally elongated slot extending transversely through both of said projections of said pair of side walls between said sealed projection edges and said continuous segment so as to form a handle for carrying said container, said projection being sealed along the boundaries of said slot and having at least one notch between said slot and said continuous segment to facilitate removing said projections from said side walls so as to expose said continuous segment, whereby said continuous segment serves as an opening for pouring said liquid from said enclosure.

4,454,980

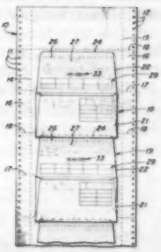
RETURN BILLER ENVELOPE BOOK

Oliver Poehler, 920 W. Elm, Wheaton, Ill. 60187

Filed Dec. 4, 1981, Ser. No. 327,609

Int. Cl.³ B65D *27/10*

U.S. Cl. 229—69 **7 Claims**



1. A return biller, comprising

a carrier web having transversely extending parallel fold lines spaced apart by a predetermined distance,

a plurality of bill payment envelopes each having a pocket portion and a flap portion foldable along a fold line between said portions over the rear face of said pocket portion and sealable thereto,

said flap portions of said envelopes lying flat against one face of said carrier web with repective ones of said flap portions being removably affixed to said carrier web between alternate ones only of said fold lines on said carrier web, with the inner face of said flap exposed,

said pocket portions of said envelopes lying flat against said one face of said carrier web in non-overlapping relationship with the adjacent flap portions of the other envelopes

with the front faces of said envelopes facing said carrier web, and

said fold lines on said envelopes being parallel to said fold lines on said carrier web, and

said carrier web being folded back and forth along said fold lines with the flap portions only of said envelopes sandwiched between adjacent faces of said carrier web.

4,454,981

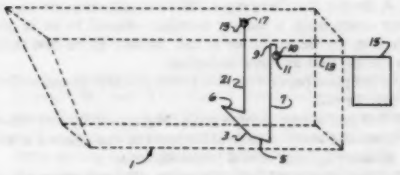
MECHANISM FOR A NEWSPAPER DELIVERY BOX FOR INDICATING DELIVERY OF A ROLLED NEWSPAPER

Lawrence G. Halmasy, Sr., 1747 Swartz Rd., Suffield, Ohio 44260

Continuation of Ser. No. 67,627, Aug. 17, 1979, abandoned. This application Apr. 27, 1981, Ser. No. 258,319

Int. Cl.³ B65D *91/00*

U.S. Cl. 232—1 C **2 Claims**



1. A mechanism attached to a newspaper delivery box to indicate when a newspaper is delivered, the mechanism comprising a contact member of a rigid material forming an integral assembly at least one first lever arm attached to at least one second lever arm through a pivot mounted near the rear of the box; wherein said contact member is moved when a newspaper is inserted, the contact member being integral to the first lever arm which is positioned inside of the box, the first lever arm being near the rear of the box and transmitting force to move the second lever arm positioned outside of the box, an indicating means attached to the second lever arm outside of the box, the indicating means being activated by movement of the contact member to rise up and indicate that a newspaper has been inserted into the box; the improvement comprising the first lever arm inside of the box having a bend, which defines a forwardly angled portion, the first lever arm extending downwardly from the pivot then angled forwardly, with respect to the position the first lever arm would have been in in the absence of the bend, to the contact member, so that when a newspaper is inserted, one end of the paper contacts the contact member and moves it to the rear of the box, thus rotating the lever arm and raising the indicating means, without the newspaper going beyond or past the contact member.

4,454,982

CONTROL VALVE

Georg Reick, Bolingbrook, Ill., and Wilhelm Zirps, Hemmingen, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

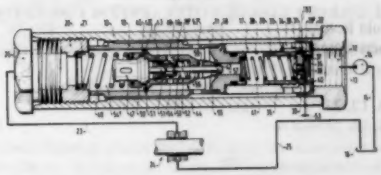
Continuation of Ser. No. 353,586, Mar. 1, 1982, abandoned. This application Oct. 3, 1983, Ser. No. 538,673

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1981, 3109850

Int. Cl.³ G05D *27/00*

U.S. Cl. 236—92 R **8 Claims**

1. A control valve for maintaining the viscosity and temperature of a pressure fluid for a hydraulic arrangement substantially constant, comprising elongated tubular housing means having a longitudinal axis, a pressure fluid inlet at one end and a pressure fluid outlet at the other end; a control slide in said housing means adjacent the pressure fluid inlet and closely guided in said housing means for movement in axial direction of the latter, said control slide defining an interior and having a peripheral surface; a member forming a valve seat arranged in said housing means coaxially with and downstream of said control slide; first spring means between said member and said control slide for biasing the latter against a shoulder of said housing means formed at the pressure fluid inlet; precontrol valve means downstream of said valve seat forming member, said precontrol valve means comprising a closer member having at one end a portion adapted to engage said valve seat; control means including an element of expandable material influenced by the temperature of the pressure fluid, said element being partly received in the other end of said closer member for controlling a throttle connection between said pressure fluid inlet and said pressure fluid outlet; second spring means between said outlet and said element for pressing the latter against said other end of said closer member and there-



with said portion at said one end of said closer member against said valve; seat; passage means leading from said inlet to said element; a first throttle passage provided at said peripheral surface of said control slide and forming part of said passage means, for providing a direct connection between said pressure fluid inlet and pressure fluid outlet when said control slide is in its foremost position constituting its initial position with respect to the inlet thereby preventing air from penetrating into the interior of the control slide; a second throttle passage providing a connection between the inlet and the precontrol valve and means for cooperating with the control slide to form with the latter an annular gap communicating with said second throttle passage and forming with the latter another part of the said passage means thereby preventing any contamination present in the pressure fluid from clogging said second throttle passage.

4,454,983

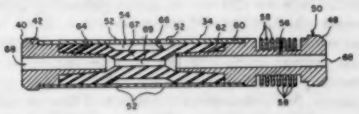
TEMPERATURE CONTROLLED VALVE

Robert J. Tarvis, Jr., Cummings and Oak Ave., Blenheim, Blackwood, N.J. 08012

Filed Feb. 4, 1982, Ser. No. 346,271

Int. Cl.³ G05D *23/12*

U.S. Cl. 236—93 A **27 Claims**



1. A control valve with flow automatically controlled by the temperature flow, comprising:

(a) a housing,

(b) an essentially unobstructed flow transport path for fluid flow through the housing,

(c) a flow adjustment means comprising a flexible tube surrounding the flow transport path to alternatively decrease the fluid flow in the path upon an increase of pressure on a surface of the flow adjustment means or increase the fluid flow in the path upon a decrease of pressure on a surface of the adjustment means,

(d) a closed chamber in direct pressure communication with

the surface of the flow adjustment means, and in direct pressure communication with the flow transport path,

(e) a control fluid essentially filling the chamber having a high coefficient of thermal expansion and essentially resisting any compression due to increased pressure exerted externally, and

(f) a heat conduction means in the flow path to convey heat mainly to and from the flow and the control fluid.

4,454,984

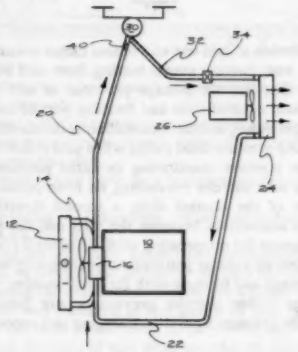
AUXILIARY CIRCULATION SYSTEM FOR VEHICLE HEATERS

Jerold R. Shaltis, Grand Rapids, Mich., assignor to Evans Products Company, Portland, Oreg.

Filed Nov. 1, 1982, Ser. No. 438,268

Int. Cl.³ G05D *23/00*

U.S. Cl. 237—2 A **7 Claims**



1. In an auxiliary circulation system for vehicle heaters including an electric pump means for effecting the circulation of coolant and control means electrically communicating said auxiliary electric pump means with the vehicle's electric power supply, said control means including a manual switch, the improvement in said control means comprising:

a first voltage responsive switch assembly located in the circuit between said manual switch and said electric pump means which, when said manual switch is closed, closes if the voltage of said power supply exceeds a predetermined first voltage level, said first voltage responsive switch assembly including means for establishing a reference voltage, first potentiometer means, and first switch means coupled to such reference voltage means and potentiometer, said first switch means being capable of comparing the voltages received from said reference voltage means and said first potentiometer means and closing if the ratio between the voltages received therefrom indicate that said predetermined first voltage level has been exceeded, and

a second voltage responsive switch assembly located in the circuit between said first voltage responsive switch assembly and said electric pump means which, when said first voltage responsive switch is closed, closes and remains closed until the voltage of such power supply drops below a predetermined second voltage level lower than said first voltage level at which time said second voltage responsive switch opens.

4,454,985

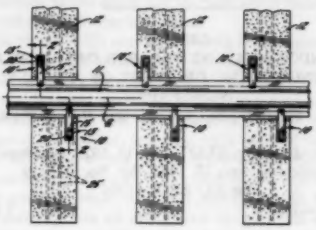
DEVICE FOR CLAMPING RAILS TO TIES

Joseph H. Carter, 1120 Mayfair Pl., Rockford, Ill. 61103

Filed Aug. 27, 1981, Ser. No. 297,049

Int. Cl.³ E01B *9/30, 9/48, 21/04*

U.S. Cl. 238—270 **5 Claims**



1. A device for clamping a rail to a cast concrete tie, said device comprising, a unitary member adapted to be in place relative to the tie as the tie is cast thereby to be cast rigidly with the tie, said member including:

(a) a flat plate portion disposed on top of the tie and underlying the rail,

(b) first and second flanges projecting upwardly respectively from the ends of said plate portion and spaced apart a distance to receive and locate the rail,

(c) a first elongated hollow portion disposed alongside said first flange and projecting generally vertically down into the tie, said hollow portion having an open upper end and having a first internal and generally vertical bearing surface on the side spaced outwardly from said first flange and a second internal bearing surface spaced below and inwardly of said first bearing surface, said second bearing surface being inclined to project downwardly and inwardly, and

(d) a second and similar hollow portion disposed alongside said second flange and projecting down into the tie, said second hollow portion also having an open upper end and having third and fourth bearing surfaces similar respectively to the first and second bearing surfaces of said first hollow portion,

a first generally C-shaped spring having one end abutting the upper surface of the edge portion of the rail adjacent said first hollow portion, said spring projecting into said first hollow portion through the upper end thereof with the center portion of the spring being spaced inwardly from said first bearing surface and the other end of the spring abutting said second bearing surface, a first wedge disposed between said center portion of said spring and said first bearing surface to force the spring inwardly and to force said other end of the spring downwardly along said second bearing surface whereby the spring firmly clamps the rail to the tie, a second and similar spring and similarly disposed relative to said second hollow portion and the other edge portion of the rail, and second and similar wedge similarly disposed in said second hollow portion and similarly acting on said second spring whereby the latter also clamps the rail to the tie.

4,454,986

RAILROAD SPIKE

Ernest J. Taylor-Smith, Vancouver, Canada, assignor to Koppers International Canada Ltd., Richmond, Canada

Filed Dec. 11, 1980, Ser. No. 215,229

Int. Cl.³ E01B *9/10, 21/04, 29/24*

U.S. Cl. 238—369 **4 Claims**

1. A railroad spike comprising a head;

a contact plate having a hole adapted to receive said spike and to align with an opening in a railroad tie plate, the spike acting, when in use, to exert pressure on the contact plate;

spaced limbs extending from the head;
a wedge positionable between the limbs to spread said limbs and able to pass through the hole in the contact plate;
a passageway through the head to a point between the limbs and a rod extending from one end of the wedge and adapted to occupy said passageway;
a lug extending from said rod and positioned to be trapped between the head and the contact plate when the spike is in its useful position;

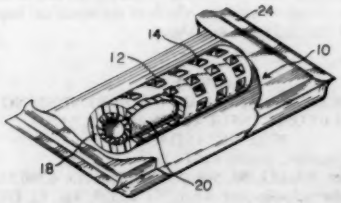
whereby driving of the spike downwardly through the contact plate into a tie plate of a railroad drives the limbs over the wedge to spread the limbs and to force the lug into contact with the contact plate, the spreading of the limbs acting to prevent the spike moving upwardly and the contact of the lug with the contact plate acting to prevent the wedge moving downwardly and whereby removal of the spike can only be achieved by removing the lugs and moving the rod and wedge downwardly while pulling the head of the spike upwardly.

4,454,987

DISPENSING FRAGRANCES

Peter W. D. Mitchell, Freehold, N.J., assignor to Union Camp Corporation, Wayne, N.J.

Filed Jul. 29, 1982, Ser. No. 403,157
Int. Cl.³ A61L *9/04*
U.S. Cl. 239—6 **11 Claims**



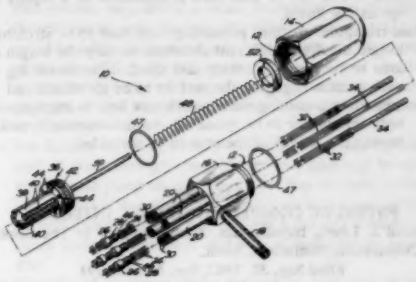
1. A method of dispensing the fragrance of an odorant alcohol, which comprises;
providing in a moisture impermeable, moisture-free package, a hydrophilic carrier member impregnated with the hydrolyzable aluminate of an odorant alcohol;
opening the package; and
exposing the carrier member to moisture under conditions promulgative of hydrolysis of the aluminate impregnant;
whereby the odorant alcohol is produced by hydrolysis of the aluminate and released from the carrier member over a period of time.

4,454,988

SELF-CLEANING NOZZLE

John E. Waldrum, Ambler, Pa., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 24, 1982, Ser. No. 361,190
Int. Cl.³ B05B *15/02*
U.S. Cl. 239—118 **4 Claims**



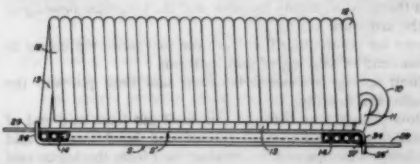
1. A self-cleaning nozzle for use in spray devices comprising a hollow body, liquid supply means for supplying liquid under pressure to said hollow body; liquid discharge means associated with said hollow body for discharging pressurized liquid from said hollow body, said liquid discharge means including capillary tubes for discharging pressurized liquid from said hollow body and including a plurality of discharge pipes projecting outwardly from said hollow body, each discharge pipe accomodating a plurality of said capillary tubes and each of said capillary tubes having a capillary tube port in liquid communication with said liquid in said hollow body, said capillary tubes being secured to and extending through a capillary tube body detachably secured to said discharge pipes and capillary blocking and cleaning means disposed and positioned in said hollow body including urging means, a piston having an elongated portion, said piston being movable in said hollow body, and cleaning needles associated with said piston, said cleaning needles being positioned in axial alignment with a corresponding capillary tube, each of said cleaning needles being adapted to traverse a path through a corresponding capillary tube, and adapted to be in a first position during non-operation of said self-cleaning nozzle in which said cleaning needles block the passage of liquid through said capillary tubes and which are adapted to be urged toward a second position in which said cleaning needles are partially withdrawn from said capillary tubes whereby said pressurized liquid in said hollow body is permitted to flow through said capillary tubes and thence to be urged back through said tubes to clean said tubes prior to arriving at said first position.

4,454,989

SPRINKLING HOSES

George K. Alston, Box 4, Frannie, Wyo. 82423

Filed Nov. 30, 1981, Ser. No. 325,658
Int. Cl.³ B05B *1/20*
U.S. Cl. 239—269 **8 Claims**



1. A hollow sprinkling hose, comprising:

a series of connected, preformed, generally triangular, similar sections, two corresponding legs of substantially each section having apertures for the outward discharge of liquid therethrough and the third corresponding leg of each section being imperforate, said hose being formed of a material which will permit lengthwise stretching of the hose through limited flexing of the connections between adjacent legs and flexing of said adjacent legs;

means at one end of said hose connectable to a supply of sprinkling liquid;

said triangular sections permitting said hose to be stretched longitudinally to different distances to vary the length of area to be sprinkled, with said third, imperforate leg of each section engaging the surface to be sprinkled; and

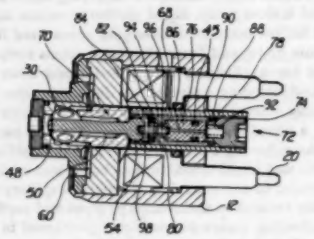
means for maintaining said imperforate legs in engagement with the surface to be sprinkled and simultaneously maintaining the length of the area to be sprinkled.

4,454,990

PRESSURE COMPENSATED FUEL INJECTOR

Donald J. Lewis, Birmingham, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 30, 1982, Ser. No. 430,191
Int. Cl.³ B05B 1/30
U.S. Cl. 239—585 **4 Claims**



1. A pressure compensated fuel injector having a tubular housing member enclosed at one end containing a solenoid coil assembly for generating a magnetic field, a tube member extending through an aperture in the enclosed end, an adjustment means threaded in the tube member, an armature means adapted to be magnetically attracted to the tube member and having a spherical bearing connected thereto for locating and guiding in the tube member as the armature means moves under control of the magnetic field, valve seat means, valve member means responsive to the armature means for moving relative to the valve seat means, and means at the open end of the tubular housing member for receiving pressurized fuel into the injector for discharge between the valve member means and the valve seat means under control of the magnetic field, the injector characterized by:

the armature means being spaced from the tube member for forming a control gap therebetween;

the adjustment means additionally includes a tubular "T" shaped limit pin wherein the cross sectional area of the end of the head of said pin is greater than the cross sectional area of the end of the leg of said limit pin, said limit pin being movable within the tube member and interposed a threaded adjusting member and the spherical bearing of the armature means;

means for conducting fuel from the fuel receiving means to said end of said leg of said limit pin;

a limit spring connected between said limit pin and the spherical bearing;

a flow passageway through said limit pin from said end of said leg thereof to said end of said head thereof, said passageway operable to conduct fuel from the leg to said head of said limit pin;

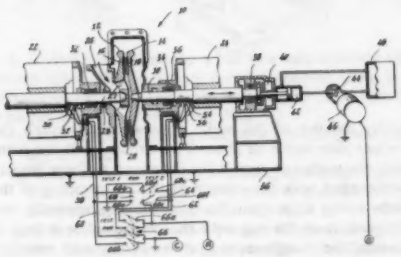
said limit pin being movable to a plurality of positions for varying the force applied by said limit spring to the armature means in response to the change in the force applied by the pressure of the fuel against the cross sectional areas of said end of said leg and said end of said head of said pin so that the force holding the valve member means against the valve seat means varies in direct proportion to changes in the pressure of the fuel with said control gap remaining fixed.

4,454,991

APPARATUS AND METHOD FOR MONITORING AND CONTROLLING A DISC REFINER GAP

Irving R. Brenholdt, Stratford, Conn., assignor to St. Regis Paper Company, West Nyack, N.Y.

Filed Feb. 22, 1982, Ser. No. 351,373
Int. Cl.³ B02C 7/14
U.S. Cl. 241—30 **29 Claims**



1. In a refining apparatus including first and second counter-rotating electrically conductive refining members with spaced refining surfaces facing one another to form a gap in which material can be refined, and means for rotating said first and second members, respectively, on first and second electrically conductive shafts supported in a housing by lubricated bearing means, the improvement comprising:

oscillator means for producing a stable high frequency alternating signal;

first means for coupling said alternating signal to one of said first or second shafts;

second means for coupling the other one of said shafts to a return circuit path to provide a complete circuit for said alternating signal across the electrical impedance of said gap; and

means coupled to said circuit for monitoring the size of said gap in accordance with the effects of the electrical impedance of said gap upon said signal.

4,454,992

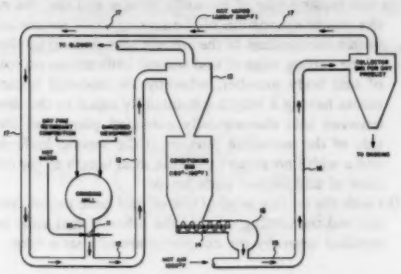
WET PROCESSING APPARATUS FOR RENDERING CELLULOSIC INSULATION PARTICLES FIRE-RETARDANT

Samuel M. Draganov, Tustin, Calif.

Division of Ser. No. 183,359, Sep. 2, 1980, Pat. No. 4,386,118, which is a continuation-in-part of Ser. No. 32,119, Apr. 22, 1979, abandoned. This application Feb. 25, 1983, Ser. No. 469,918
Int. Cl.³ B02C 19/12
U.S. Cl. 241—42 **3 Claims**

1. Wet process apparatus for rendering cellulosic insulation particles fire retardant by the use of a non-hygroscopic boric acid or borate composition, comprising a grinder for producing cellulosic insulation particles from cellulosic material such as waste paper; spray means for water or an aqueous solution, said spray means being located in the path of discharge of material from said grinder; conduit means for receiving cellulosic insulation particles wetted by said spray means; means for flowing a hot moist vapor through said conduit means as a carrier for the wetted insulation particles; a closed condition-

ing bin into the top of which said conduit means discharges; discharge means at the bottom of said conditioning bin; second conduit means into which said discharge means discharges conditioned insulation material from said conditioning bin;



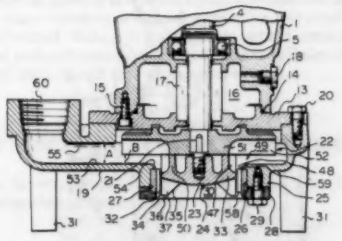
means for introducing hot drying air into said second conduit means for carrying said conditioned insulation material through said second conduit means; and means for collecting dried conditioned insulation material from said second conduit means.

4,454,993

GRINDER PUMP

Tomoyuki Shibata, Yokohama, and Mituhito Nakayama, Fujisawa, both of Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Jan. 25, 1982, Ser. No. 342,408
Claims priority, application Japan, Aug. 29, 1981, 56-136004
Int. Cl.³ B02C *23/36*
U.S. Cl. 241—46 B **6 Claims**



1. A grinder pump including a casing having a pump chamber, a suction port communicating with said pump chamber and a discharge passage communicating with said pump chamber, a motor and a pump shaft operatively associated with said motor and extending axially through said pump chamber, comprising:

a semi-open type pump impeller disposed in said pump chamber and including a pump impeller hub adapted to cooperate with said pump shaft for mounting said pump impeller thereon, said pump impeller further comprising a plurality of pump impeller blades extending radially from said pump impeller hub and each said plurality of pump impeller blades having an open side edge facing said suction port and wherein said open side edges of said plurality of pump impeller blades are positioned a predetermined distance above a lower end wall of said discharge passage so as to maintain a desired pump efficiency;

a grinder ring mounted in said suction port coaxially with said pump shaft and wherein said grinder ring further comprises a plurality of axially extending grinding grooves and a plurality of axially extending grinding edges on an inner surface thereof;

a grinder impeller mounted on an end of said pump shaft distal said motor and positioned adjacent said pump impeller, said grinder impeller further comprising a grinder impeller hub facing said suction port and at least two grinding blades disposed on said grinder impeller hub, each of said at least two grinding blades having a sharp axial edge defining a cylindrical surface of revolution when said grinder impeller is rotated and wherein said cylindrical surface of revolution and said inner surface of said grinder ring define a small, predetermined clearance therebetween such that said plurality of axially extending grinding edges and said at least two grinding blades cooperate to effect shredding therebetween and further wherein a diameter of said grinder impeller hub is substantially equivalent to a diameter of said cylindrical surface of revolution;

a boss formed on said grinder impeller hub on a side opposite said at least two grinding blades and disposed to abut against said pump impeller hub such that an outer surface of said boss is smoothly continguous with an outer surface of said pump impeller hub to form a smooth continuous outer surface to prevent clogging of said grinder pump; and

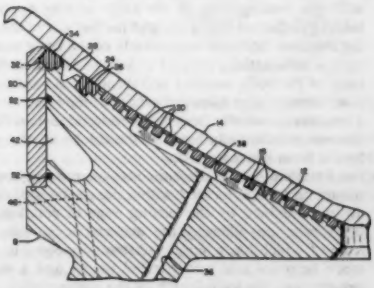
a plurality of auxiliary blades formed on said boss of said grinder impeller hub, each of said plurality of auxiliary blades having a radial end disposed substantially on said cylindrical surface of revolution and wherein each of said plurality of auxiliary blades forms a continuous axial surface with a corresponding one of said plurality of pump impeller blades to prevent clogging of said grinder pump.

4,454,994

LOAD BEARING SURFACE

Louis W. Johnson, and Bruce G. Johnson, both of 2435 Prairie Rd., Eugene, Oreg. 97402

Filed Feb. 4, 1982, Ser. No. 345,733
Int. Cl.³ B02C *2/04*
U.S. Cl. 241—215 **12 Claims**



1. A bearing assembly for supporting a movable load-receiving member comprising:

(a) a base member having a face surface arranged to face a load receiving member,

(b) a plurality of grooves in said surface disposed in spaced relation to each other and defined by longitudinal wall portions therebetween of predetermined depth,

(c) bearing inserts supported in said grooves being dimensioned to project beyond the depth of said grooves so that said inserts provide projecting portions extending from said grooves towards said load receiving member,

(d) the projecting portions of said inserts terminating in load bearing surfaces arranged to be engaged by said load receiving member,

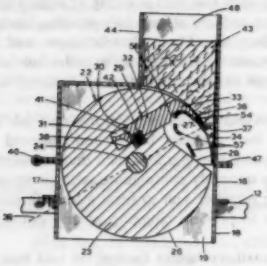
(e) and lubrication means in said bearing assembly supplying a lubricating fluid to said bearing surfaces of said inserts.

4,454,995

CUTTER HEAD FOR A MATERIAL CUTTING MACHINE

Gerald E. Bloomquist, Wausau, Wis., assignor to Patricia Bloomquist, Wausau, Wis.

Continuation of Ser. No. 132,901, Mar. 24, 1980, abandoned.
This application Mar. 26, 1982, Ser. No. 362,555
Int. Cl.[3] B02C 18/18
U.S. Cl. 241—277 3 Claims



1. A cutter head for a machine for cutting a material into pieces comprising:

(a) a cylindrical body member adapted to be mounted for rotation about the longitudinal axis thereof, said body member having at least one axially extended piece-receiving cavity in the outer peripheral surface thereof formed with a leading surface,

(b) a knife means operatively associated with said cavity having a mounting section with a flat side and an elongated knife section at one end of said mounting section projected outwardly from said flat side, said knife section having a flat leading side and a flat trailing side which intersects the leading side at an acute angle to form a cutting edge,

(c) means for securing said knife means to the body member with the leading side of the knife section opposite the leading surface of the cavity and the flat side of the mounting member extended transversely of the body member in a plane substantially parallel to a plane extended diametrically of the body member and through said cutting edge,

(d) said cutting edge extended axially of the body member at a position outwardly from the peripheral surface thereof a distance substantially equal to the thickness of a piece to be cut from the material,

(e) said trailing side of the knife section and one end of the mounting section located within the confines of the arcuate path defined by the cutting edge of rotation of said body member; whereby the material is cut into pieces, each of which has a length substantially equal to the distance between said two parallel planes and a width no greater than the axial length of the cutting edge,

(f) a second axially extended piece-receiving cavity in the outer peripheral surface of the body member positioned diametrically opposite said one cavity and having a leading surface,

(g) a second knife means including a mounting section having a flat side and an elongated knife section at one end of said mounting section projected outwardly from said flat side, said knife section having a flat leading side and a flat trailing side which intersects the leading side at an acute angle to form a cutting edge,

(h) means for securing said second knife means to the body member with the leading side of the knife section therefor opposite the leading surface of the second cavity, the flat side of the mounting section thereof extended transversely of the body member in a plane substantially parallel to said diametrically extended plane, and the cutting edge thereof positioned in said diametrically extended plane,

(i) said cutting edge of the second knife means extended axially of the body member at a position outwardly from the peripheral surface thereof a distance substantially equal to the thickness of the piece to be cut from said material by the first knife means, and

(j) said trailing side of the knife section and the one end of the mounting portion of the second knife means located within the confines of the arcuate path defined by the path of the cutting edge of said second knife means on rotation of said body member, whereby the material is cut into pieces having a length substantially equal to the distance between said diametrically extended plane and the flat side of the mounting portion of the second knife means and a width no greater than the axial length of the cutting edge of said second knife means,

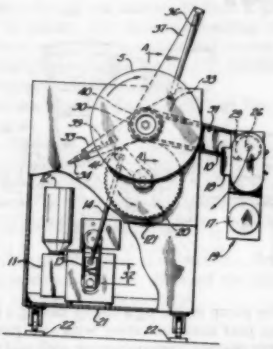
(k) with the cutting edge of one of said knife means continuous and the cutting edge of the other of said knife means notched whereby the cut pieces are of a strip form.

4,454,996

COMBINATION RIBBON STRING-UP AND WINDER APPARATUS

Christopher L. Windeler, Chester; Henry S. DeVore, Long Valley; David B. Seal, North Caldwell, and Boleslaw L. Budzyn, Passic, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jan. 27, 1983, Ser. No. 461,288
Int. Cl.[3] B65H 54/02, 65/00
U.S. Cl. 242—25 R 14 Claims



1. An apparatus for the inline string-up of a rapidly advancing filament from a continuous forming operation on to a winding wheel rotating about a concentric axis of rotation, comprising:

(a) a take-up head for capturing and tensioning the advancing segment of said filament, said pickup head rotatable about a head axis positioned substantially parallel to said winding wheel axis;

(b) a carrier arm extending radially from said winding wheel axis, said arm connected to said take-up head at said head axis and further connected to pivot concentrically about said winding wheel axis;

(c) actuator means for pivoting said carrier arm about said winding wheel axis to move said pick-up head around said winding wheel and contact a segment of said filament with a winding surface of said wheel; and

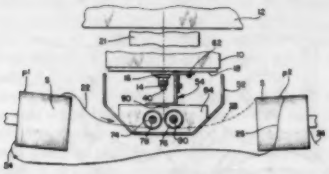
(d) grip means for severing said filament at the winding surface and securing the advancing segment of said filament onto the winding wheel.

4,454,997

INLET GUIDE MEANS FOR STRAND USER DEVICES

Harold A. Jones, East Greenwich; Manuel G. Teixeira, Cumberland, and Arthur N. Verrier, Warwick Neck, all of R.I., assignors to Leesona Corporation, Warwick, R.I.

Filed Mar. 4, 1982, Ser. No. 354,775
Int. Cl.³ B65H 51/20
U.S. Cl. 242—47.01 5 Claims



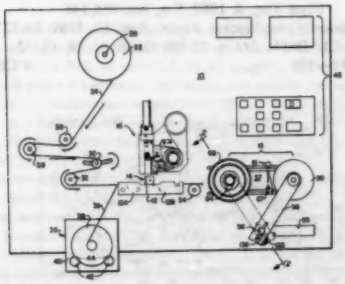
1. In combination with a strand storage feeder onto which a predetermined amount of strand is accumulated for delivery to strand consuming means, said feeder being operable to receive advancing strand delivered to a bore of a delivery tube thereon sequentially from first and second strand supplies, the improvement comprising, first and second roller means, means mounting each said roller means for free rotation, said first strand supply being positioned for delivery of a first strand therefrom to said first roller means in a first path, said second strand supply being postioned for delivery of a second strand therefrom to said second roller means in a first path, said first and second strands being engaged with said respective first and second roller means during advance along said respective first paths and directed in a second path diverging from said respective first paths, said first and second roller means being disposed to move said respective first and second strands into generally axial alignment with the bore of said delivery tube as said strands move in said second path, and said first and second roller means rotating as said respective first and second strands are advanced thereover to maintain strand tension in said second path substantially equal to the strand tension in said first path of each of said first and second strands.

4,454,998

TAPE WINDING GUIDE AND CENTERING APPARATUS AND METHOD

David Sarser, Northport, N.Y., assignor to King Instrument Corporation, Westboro, Mass.

Filed Aug. 25, 1981, Ser. No. 295,992
Int. Cl.³ B65H 19/00, 21/00, 27/00
U.S. Cl. 242—68.1 12 Claims



1. In a machine for winding a tape having a substantially constant width onto a reel, said reel comprising a hub with an axial recess and a pair of coaxial parallel spaced-apart resiliently distortable circular flanges, each flange having a given thickness, and said machine including means for rotating said reel coaxially about said hub and means for supplying said tape along a path parallel to and between said flanges, the improvement comprising in combination:

a rotatable spindle means dimensioned to engage said recess, said spindle further being radially resiliently compressible;

a first rigid disk connected to and concentric with said spindle, said first disk having a concentric raised ridge with an inner diameter no greater than that of a one of said circular flanges;

a second rigid disk having a concentric raised ridge with an inner diameter substantially the same as the ridge on said first disk;

first means rotatably supporting said second disk;

second means for movably mounting said first means so as to enable said second disk to be placed in coaxial relation with said first disk with said ridges confronting and spaced from one another a first predetermined distance; and

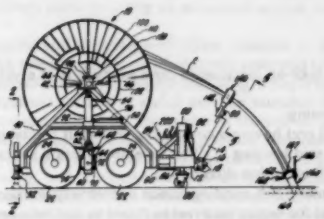
a reel centering means rotatable with said second disk and engageable with said hub when said hub is mounted on said spindle and said first and second disks are coaxially aligned, said centering means being adjustable axially of said second disk so that it may displace said hub toward said first disk a predetermined distance.

4,454,999

CABLE DISPENSING DEVICE AND METHOD

Harold F. Woodruff, Hacienda Heights, Calif.

Filed Apr. 20, 1981, Ser. No. 255,898
Int. Cl.³ B65H 75/40
U.S. Cl. 242—86.5 R 20 Claims



1. A self-propelled, cable dispensing dolly comprising:

(a) a frame having a front, a rear, and two sides,

(b) on the frame means for rotatably supporting at least three cable reels side-by-side, each cable reel having two opposing rims and a core section disposed therebetween, the supporting means allowing the reels to rotate independently;

(c) independent driving means operably communicating with each supported reel, and means for controlling the driving means to selectively apply a driving torque to each cable reel to cause rotation in a first direction of rotation to unwind cable from each cable reel or to selectively apply a driving torque to each cable reel to cause rotation in a second direction of rotation to wind cable onto each cable reel;

(d) a control means operable with each of the driving means for adjusting the torque applied to each cable reel independent of the torque applied to any other cable reel;

(e) a first pair of wheels comprising a front wheel and a rear wheel on one side of the frame and a second pair of wheels comprising another front wheel and another rear wheel on the other side of the frame; and

(f) first rotating means for rotating the first pair of wheels forward or backwards and second rotating means for rotating the second pair of wheels forward or backward, the first and second rotating means being independent of each other so that the two pairs of wheels can rotate in the same direction or in opposite directions.

4,455,000

TAKE-UP MECHANISM FOR SAFETY BELTS

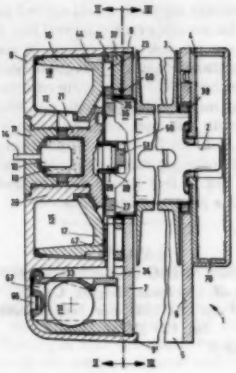
Karl E. Nilsson, Ottobrunn, Fed. Rep. of Germany, assignor to Bayern-Chemie Gesellschaft für Flugchemische Antriebe mit beschränkter Haftung, Fed. Rep. of Germany

Filed Apr. 27, 1983, Ser. No. 489,003

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1982, 3215929

Int. Cl.³ A62B *35/02*

U.S. Cl. 242—107.4 A 18 Claims



1. A take-up mechanism for a safety belt of a vehicle, comprising:

a housing;

a belt reel having a co-rotating reel shaft rotatably mounted to said housing in a belt take-up direction and an opposite belt extension direction;

automatic belt winding means operatively connected to said reel for urging said reel to rotate in said take-up direction;

a notched wheel co-rotatably connected to said reel shaft;

a rotary piston motor with an abutment connected to said housing, a rotary vane rotatably mounted to said housing in said take-up direction and defining a chamber with said abutment, and gas pressure means for pressurizing the chamber to rotate said rotary vane upon activation of said gas pressure means by the occurrence of an abrupt vehicle motion;

a ring co-rotably connected to said rotary vane;

vehicle sensitive blocking means including a stop element movable to engage said notched wheel and stop rotation of said shaft in said belt extension direction upon the occurrence of an abrupt vehicle motion;

a control disc rotatably mounted to said housing and rotatable upon at least one of the occurrence of an abrupt vehicle motion and an abrupt motion of said reel shaft in said extension direction;

at least one blocking element movably mounted to said ring and operatively engaged with said control disc for engagement with said notched wheel upon rotation of said control disc so that an abrupt vehicle motion which activates said gas pressure means causes engagement of said ring to said notched wheel over said at least one blocking element to rotate said notched wheel and connected reel shaft in said take-up direction; and

locking means engaged between said housing and said ring for preventing rotation of said ring in said extension direction.

4,455,001

TAPE TRANSPORT CARTRIDGE

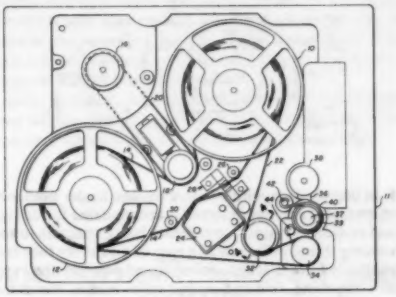
David C. Schilke, Middletown, and Paul D. Dringoli, Wallingford, both of Conn., assignors to Raymond Engineering Inc., Middletown, Conn.

Continuation of Ser. No. 850,791, Nov. 11, 1977, abandoned.

This application Apr. 5, 1982, Ser. No. 365,341

Int. Cl.³ G03B *1/04;* G11B *15/32*

U.S. Cl. 242—192 18 Claims



8. A tape transport including:

a base for mounting tape transport elements;

first and second tape transfer means rotatably mounted on said base for transfer of tape therebetween;

belt means for contacting the periphery of tape packs on each of said first and second tape transport means to transfer tape between said first and second tape transfer means;

drive means for driving said belt means;

dynamically balanced tensioning means in contact with said belt means for imparting a desired tension to said belt means; and

temperature compensated rotary brake means in contact with said belt means to impose a variable drag effect on said belt means as a function of temperature for imparting desired tension to the tape being transferred between said first and second tape transfer means over a range of temperatures.

4,455,002

TAPE GUIDE DEVICE OF A MAGNETIC TAPE DRIVING APPARATUS

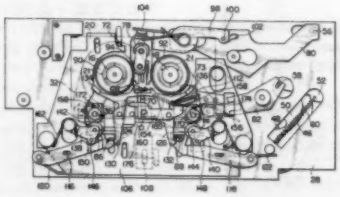
Shoichi Saito, and Kazumi Miyazi, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 4, 1982, Ser. No. 405,146

Claims priority, application Japan, Aug. 13, 1981, 56-127117

Int. Cl.³ B65H *23/26, 27/00;* G11B *15/29, 15/32*

U.S. Cl. 242—199 4 Claims



1. In a magnetic tape driving apparatus for selectively driving a magnetic tape housed in a tape cassette either at a first predetermined speed or at a second speed which is faster than said first speed, and which has a magnetic head and a first tape

guide which is in contact with the magnetic tape when the magnetic tape runs at said first speed with the magnetic tape in contact with said magnetic head so as to prevent the magnetic tape from deflecting in the width direction of the magnetic tape, the magnetic tape being out of contact with said magnetic head when the magnetic tape runs at said second faster speed, the improvement comprising:

a second tape guide which is selectively in contact with the magnetic tape for preventing the magnetic tape from deflecting in the width direction of the magnetic tape;

a cam member mounted so as to selectively take at least first and second different angular positions corresponding respectively to said first and second speeds of the magnetic tape; and

a cam-guided-lever means coupled to said cam member and to said second tape guide and guided by said cam member moving to said second position thereof to shift said second tape guide to a contact position in which said second tape guide is in contact with the magnetic tape, so as to prevent the magnetic tape from deflecting in the width direction of the magnetic tape when the magnetic tape is out of contact with said magnetic head and runs at said second speed, and said cam-guided-lever means being guided by said cam member moving to said first position thereof to shift said second tape guide to a separation position in which said second tape guide is out of contact with the magnetic tape when the magnetic tape runs at the first speed and is in contact with said magnetic head.

4,455,003

SUPERCRITICAL AIR-FOIL PROFILE

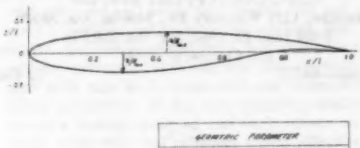
Reinhard Hilbig, Delmenorst, Fed. Rep. of Germany, assignor to VFW, Bremen, Fed. Rep. of Germany

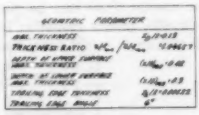
Filed Mar. 20, 1978, Ser. No. 888,319

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1977, 2712717

Int. Cl.³ B64C *3/14*

U.S. Cl. 244—35 R **2 Claims**





1. An air-foil profile having a specific Mach design number not exceeding about 0.85 and a maximum profile thickness of about 0.13±20% in units of chord lengths, the profile having in each point a radius of curvature, the profile having separate maximum thicknesses respectively of an upper surface portion and of a lower surface portion relative to a chord line, the maximum thickness of the upper surface portion of the foil is at a 0.42 ±10% chord station;

the maximum thickness of the lower surface portion is at an about 0.27 to an about 0.37 chord station;

the surfaces having a curvature definded as the absolute inverse value of the radius of curvature, comprising the following features:

the curvature of the upper surface is between 0.3 and 0.4 for a first minimum in a chord station range from 0.3 to 0.55;

the curvature of the upper surface is about 0.4 for a relative maximum in a chord station range from 0.55 to 0.7;

the curvature of the upper surface profile is about 0.2 for a second minimum at a chord station of about 0.9;

a point of inflection in the curvature is located at a 0.5 to 0.6 chord station between the first minimum and the maximum;

the curvature of the lower surface is larger than the curvature of the upper surface for chord stations smaller than and up to 0.55;

the curvature of the lower surface is zero at a station from 0.6 to 0.7; and

the curvature of the lower surface increases rearwardly from a zero value at a change in sign to a maximum of about 1.3 from which the curvature of the lower surface drops to zero at the trailing edge of the profile.

4,455,004

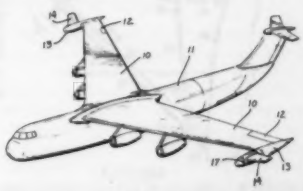
FLIGHT CONTROL DEVICE FOR AIRPLANES

Robert H. Whitaker, Sr., Atlanta, Ga., assignor to Lockheed Corporation, Burbank, Calif.

Filed Sep. 7, 1982, Ser. No. 415,016

Int. Cl.³ B64C *5/08, 9/12*

U.S. Cl. 244—90 R **10 Claims**



1. A flight control device for an airplane having a fuselage and fixed wings each including an associated aileron comprising:

an aerodynamically configured boom attached to and extending along the outer tip of each said wing and terminating beyond the leading edge of said wing; a single movable aerodynamic surface of airfoil contour attached to each said boom adjacent the forward end thereof so as to be disposed ahead of the leading edge of the associated wing and lying in a plane substantially parallel to the plane of said wing; and a mechanism operatively connected to each said surface for the deflection thereof relative to the associated wing, such deflection being independent of but concurrent with and in the same direction as the associated aileron.

4,455,005

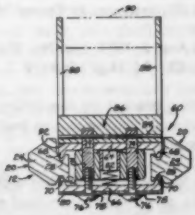
LOCKING TRIPOD LEG

Paul C. Mooney, Northbrook, Ill., assignor to Quick-set, Incorporated, Northbrook, Ill.

Filed Nov. 26, 1982, Ser. No. 444,678

Int. Cl.³ A47B *91/00*

U.S. Cl. 248—188.8 **20 Claims**



9. An adjustable tripod leg comprising:

a first leg member including an axial track;

a second leg member axially movable with respect to said first leg member;

brake shoes associated with said second leg member and including means for following said track; and

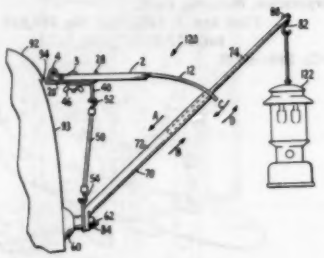
means associated with said brake shoes for selectively biasing said following means into frictional contact with said track to prevent relative axial motion of said leg members.

4,455,006

APPARATUS FOR HANGING LANTERNS FROM VEHICLES

Gordon V. Asserude, 444 La Paloma Rd., El Sobrante, Calif. 94803

Filed May 27, 1982, Ser. No. 382,381
Int. Cl.³ F16B *47/00*
U.S. Cl. 248—205.5 **3 Claims**



1. An apparatus for hanging an item from a vehicle comprising:

A. a bracket arm comprising: (1) at a first extreme end thereof means for attaching said bracket arm to a gutter of a roof of said vehicle, (2) a central portion connected to said first extreme end, and (3) a second extreme end connected to said central portion and being characterized as being relatively flexible as contrasted to said central portion and possessing an orifice therethrough proximate its end remote from said central portion; and

B. rod means which, at one end thereof, is connected to means for attaching said rod to a side wall of the vehicle below said gutter and the remote end thereof possessing means for attachment of said rod to an item to be hanged, said rod means being caused to pass through said orifice contained in said second extreme end of said bracket arm; and

C. a support strap functionally connected to said central portion of said bracket arm at its first extremity and to said rod means at its other extremity.

4,455,007

HANG RAIL SUPPORT AND HANG RAIL

David S. Varon, Highland Park, and Steven C. Dorner, Western Springs, both of Ill., assignors to Crown Metal Manufacturing, Chicago, Ill.

Filed Aug. 3, 1982, Ser. No. 404,820
Int. Cl.³ A47H *1/14*; A47F *5/00*
U.S. Cl. 248—251 **10 Claims**

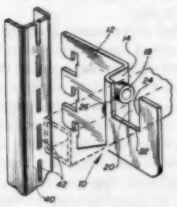
1. A bar supporting bracket for supporting and firmly holding a generally rectangular cross-section load supporting hang rail or bar and comprising:

A. an integral elongate bracket body of sheet metal formed as a generally S-shaped member but with relatively sharp bends whereby to provide a proximal end section and a distal end section offset laterally from one another and connected by a laterally bent center section, said end sections defining vertical parallel spaced planes, the center section being perpendicular to said planes and generally coextensive with said end sections,

B. the proximal end section having means for enabling the bracket body to be mounted to a vertical support structure,

C. said distal end section having a notch opening to the upper edge thereof, said notch having front, rear and bottom supporting edges, said notch having substantially the same cross sectional configuration as at least substantially the lower portion of the hang rail or bar adapted to be engaged therein,

D. the rear supporting edge of the notch being adjacent the bend conneting the distal end section with the laterally bent section whereby when a hang rail or bar is engaged



in said notch, the rear surface of the hang rail or bar will be spaced slightly from and parallel with the front surface of said center section, and

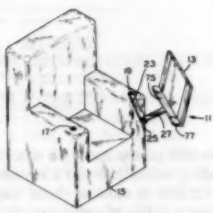
E. a yieldable bumper member mounted to the front surface of said laterally bent center section and having a thickness when not compressed which is greater than the space between said front surface and the installed hang rail or bar so that when the latter is installed the same will interfere with said bumper member and thereby be frictionally engaged to resist removel from or endwise movement in said notch.

4,455,008

MODULAR SUPPORT SYSTEM

James MacKew, 1221 Westbury Dr., Mobile, Ala. 36609

Filed Dec. 22, 1980, Ser. No. 218,370
Int. Cl.³ A47B *19/00*
U.S. Cl. 248—447.2 **22 Claims**



1. Apparatus for supporting any one of a wide variety of sizes of reading materials at a freely selectable location in relation to any selected one of a wide variety of local seating environments comprising:

an expansible reading material holding assembly having lateral extension portions and telescopic risers movable in generally orthogonal directions relative to each other to expand and contract the reading material support area;

a plurality of support mechanisms each adapted for attachment to a different class of local seating environment; and

means for coupling the holding assembly to a selected one of the support mechanisms and providing a limited amount of manual adjustability of elevation of the holding assembly relative to the selected support mechanism as well as a limited amount of manual adjustability of the angular

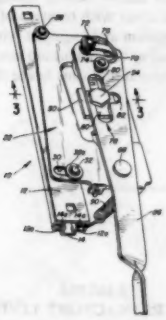
relationship of the holding assembly relative to a vertical direction.

4,455,009

ADJUSTABLE VEHICLE SEAT MOUNTING DEVICE

Danny S. Foster, Davenport, and Daniel L. Burns, Muscatine, both of Iowa, assignors to Sears Manufacturing Co., Inc., Davenport, Iowa

Filed May 10, 1982, Ser. No. 376,674
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—561 **22 Claims**



1. An adjustable seat mounting mechanism, comprising:

a slide assembly having a first part for attachment to a fixed base structure and a second part for attachment to a seat or seat support structure to permit relative fore and aft movement of the seat in respect to the base structure;

latch means mounted on said second part for movement with said seat and for locking engagement with said first part to lock said seat in a variety of fore and aft positions of adjustment;

isolation means mounted on said second part for movement with said seat and permitting limited fore and aft movement of said seat while in locked position; and

unitarily operable control means mounted on said second part for movement with said seat and operatively associated with said latch means and said isolation means to effect adjustment of the seat mounting mechanism between a locking mode of said latch means, an isolation mode rendering said isolation means effective, and an unlocking mode of said latch means to permit fore and aft adjustment of the seat.

4,455,010

RESILIENT SUPPORT

Robert Butler, 6414 University Ave., San Diego, Calif. 92115

Filed Jul. 21, 1981, Ser. No. 285,296
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—576 **11 Claims**

1. A resilient support for seats or the like comprising:

a first tubular member having an upper seat attachment portion and a lower portion,

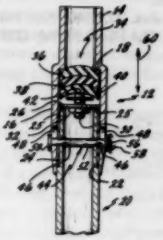
a second member attached to seat supporting structure at one end and configured to telescope within said lower portion at its other end,

a plurality of resilient members positioned associated with, said first and second members;

a protruding member carried by one of said members and positioned to engage only the center of one of said resilient members; and

a pin for passing through said elongated slot and said bore when said first and second members are engaged for securing together said members in a telescoping relationship,

whereby relative downward forces between said members cause said members to telescope wherein said protruding member bears against said center portion of said one of



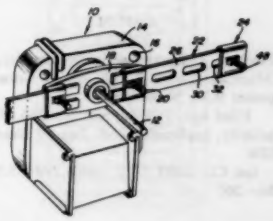
said resilient members forcing the center portion of all of said resilient members to resistively yield to said downward forces.

4,455,011

H-SHAPED BRACKET WITH SLIDABLE REINFORCING NUT

Fred Levine, 1330 99th St., Bay Harbor Islands, Fla. 33154

Continuation-in-part of Ser. No. 50,503, Jun. 20, 1979, Pat. No. 4,260,125, which is a division of Ser. No. 868,267, Jan. 5, 1978, Pat. No. 4,174,821, which is a continuation-in-part of Ser. No. 692,271, Jun. 3, 1976, Pat. No. 4,076,196. This application Feb. 12, 1981, Ser. No. 234,108
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—646 **3 Claims**



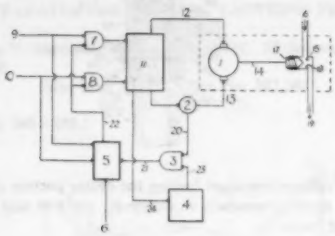
1. In combination, a small horsepower electric motor having an output shaft and predetermined apertures extending through the stator for receiving mounting fasteners or a casing with predetermined studs, said shaft having a fan mounted thereon for rotation therewith for use in a refrigerator, cooler, air conditioner, or the like, having predetermined apertures provided for receiving motor mounting fasteners arranged in non-aligned relation to the apertures in the motor stator or the studs on the casing, a bracket in the form of an elongated strap member of rigid construction and having a plurality of slots therein with at least one endmost slot being open, a nut slidably adjustably mounted on the bracket and encircling the major portion of the periphery of the strap member to rigidify and reinforce the open-ended slot, said nut including spaced openings with one of them defining means engaging a screw threaded fastener or stud after it extends through the other opening in the nut and the slot in the bracket to support the motor from the non-aligned apertures.

4,455,012

REMOTELY CONTROLLED VALVE

Krishna M. Gupta, Ithaca, N.Y., assignor to Porous Materials, Inc., Ithaca, N.Y.

Filed Jan. 22, 1982, Ser. No. 341,707
Int. Cl.³ F16K *31/04*; G05D *3/08*
U.S. Cl. 251—134 **4 Claims**



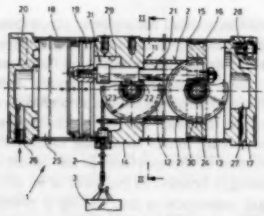
1. A motor-controlled valve system comprising:
a. a valve having two positions, adapted to be mechanically driven between the two positions;
b. reversible electrical motor means connected to said valve for driving the valve between the two positions wherein the current drawn by the motor increases when a position is reached by the valve;
c. adjustable current-sensor means for measuring the current in the motor means;
d. means responsive to said current sensor means for de-energizing the motor means when the current exceeds a preselected value indicating that the valve has been driven to one of its two positions;
e. adjustable delay means triggered by the energization of the motor means for delaying the de-energization of the motor means, whereby transient currents accompanying the energization of the motor means are ignored;
f. latch means for preventing energization of the motor means in the same direction as last energized.

4,455,013

HOIST

Gerhard Fischer, Deggenhausertal-Wahlweiler, and Harald Berger, Meersburg, both of Fed. Rep. of Germany, assignors to Interpatent B.V., Netherlands

Filed Apr. 7, 1982, Ser. No. 366,188
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1981, 3115206
Int. Cl.³ B60T *7/12*; B66D *1/48, 5/00*
U.S. Cl. 254—267 **10 Claims**



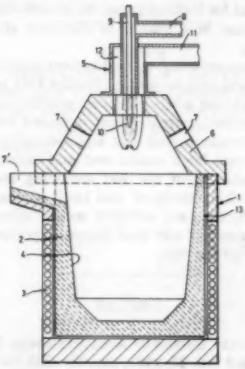
1. A hoist comprising:
a housing;
a fixed sheave set connected to the housing;
a displaceable sheave set movable with respect to the housing;
a cylinder connected to the housing;
a piston slidable in the cylinder having a threaded piston rod connected to the displaceable sheave set, the cylinder being pressurizable to move piston and displaceable sheave set;
tackle engaged to said fixed and displaceable sheave sets and connectable to a load which is movable with displacement of the displaceable sheave set;
a nut threadably engaged to the rod;
a sleeve connected to the housing for restraining axial motion of the nut with axial motion of the rod in at least one direction and for permitting rotation of the nut up to a maximum acceleration;
each of the nut and sleeve having facing friction surfaces which are spaced apart with rotation of the nut below the maximum acceleration and engaged with each other with rotation of the nut at the maximum acceleration to brake the rotation of the nut and thus brake the axial motion of the rod.

4,455,014

PRODUCTION OF REFRACTORY LININGS OR WALLS

Bernard Genies, Orsay, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation, Paris, France

Filed Dec. 10, 1982, Ser. No. 448,833
Claims priority, application France, Dec. 15, 1981, 81 23364
Int. Cl.³ C21C *7/00*
U.S. Cl. 266—44 **22 Claims**

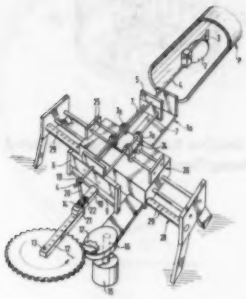


1. A method for the production of refractory linings, according to which said linings are formed from refractory lining material the sintering of which is at least partially performed by heating action, wherein, in order to provide said heating action, said method comprises the steps of
placing said linings within an enclosure having a gas-passage opening and at least one other opening;
passing through said gas-passage opening a mixture formed from fuel gas and oxygen to form a heating flame, with at least said one other opening serving to permit discharge of hot gasses resulting from combustion of said mixture; and
injecting a diluting gas into said enclosure close to said flame during at least a first part of the sintering of the refractory material in such a manner as to increase the temperature of said linings to a sintering temperature in the range of 1500° C. to 2000° C.

4,455,015
STEERING APPARATUS FOR AN AUTOGENOUS CUTTING TORCH

Leo Larikka, Palosaarentie 13-17 A 7, 65200 Vaasa 20, Finland, assignor to Leo Larikka, Vaasa, Finland

PCT No. PCT/FI82/00035, 371 Date Mar. 21, 1983, 102(e) Date Mar. 21, 1983, PCT Pub. No. WO83/01026, PCT Pub. Date Mar. 31, 1983
PCT Filed Sep. 13, 1982, Ser. No. 483,947
Claims priority, application Finland, Sep. 14, 1981, 812851
Int. Cl.³ B23K 7/02, 7/04
U.S. Cl. 266—54 11 Claims

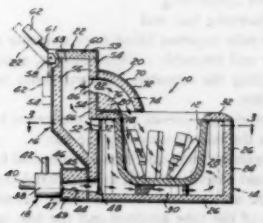


1. A steering apparatus for an autogenous cutting torch for cutting a hole of desired shape in a wall, such as in the wall of a pipe or in a flat sheet, said steering apparatus comprising a holder arm for an autogenous cutting torch (3) and means for steering the holder arm so as to guide the autogenous cutting torch along a determined orbit, characterized in that the holder arm comprises an elongated holder rod (4), arranged for axial displacement on a slide guide (7), and that the movement of an autogenous cutting torch crosswise relative to holder arm (4) is arranged to be effected by means of control elements engaging said holder arm at a distance from the cutting torch (3), said elements turning the holder arm (4) around its longitudinal axis and/or displace said holder arm (4) in its transverse direction on a slide guide (25) perpendicular relative to said slide guide (7).

4,455,016
CONVERTIBLE MELTING FURNACE

Myron G. Urdea, 9772 Mariposa Ave., Fountain Valley, Calif. 92708

Filed Sep. 24, 1982, Ser. No. 423,058
Int. Cl.³ F27B 14/14
U.S. Cl. 266—156 17 Claims

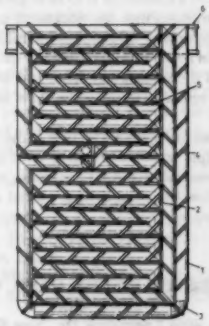


1. A crucible furnace for melting metals comprising:
a crucible;
a housing, surrounding said crucible, and having a single exhaust port therein, on one side thereof, for exhausting gases, said housing including a wall portion in spaced relationship to said crucible to form a chamber therebetween and a permanently mounted cap portion for permanently sealing between said wall and the top of said crucible, said housing completely enclosing said chamber except at said single exhaust port;
a burner for producing a pressurized combustion flame, said flame directed into said chamber, tangential to said crucible, and circulating through said chamber to heat said crucible;
an exhaust stack, external to said housing, and connected thereto at said exhaust port, for conducting hot gases from said chamber, said stack having a first stack discharge port for exhausting said gases in said stack through a first path to the atmosphere, and a second stack discharge port;
a duct, permanently mounted on the exterior of said exhaust stack at said second stack discharge port, for directing said gases in said stack through a second path into the top of said crucible; and
means, mounted on said exhaust stack, for controlling the flow of exhaust gases through said first path to selectively force said gases through said second path.

4,455,017
FORCED COOLING PANEL FOR LINING A METALLURGICAL FURNACE

Edgar R. Wunsche, Oshawa, Canada, assignor to Empco (Canada) Ltd., Oshawa, Canada

Filed Nov. 1, 1982, Ser. No. 438,317
Int. Cl.³ F27D 15/02
U.S. Cl. 266—190 23 Claims

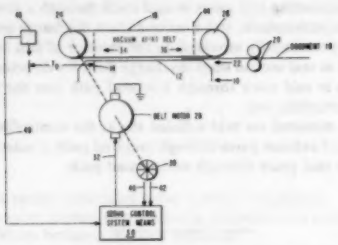


1. A forced cooling panel for lining a metallurgical furnace comprising:
a lining element having a hot face adapted to face a furnace interior and a cold face adapted to face a furnace wall,
said element comprising a plurality of at least three metal pipes disposed in generally parallel, eccentrically spaced apart noncontacting relation,
said pipes being interconnected to define a continuous passage for flow of cooling liquid,
spacer elements disposed between adjacent noncontacting eccentrically spaced pipes on said cold face, and
a plurality of spaced apart protuberances projecting from said hot face, said protuberances providing an anchoring system for preapplied refractory material or splashed on solidified slag, said protuberances extending generally diagonally of said pipes and defining a continuous flowpath for retarded flow of liquid slag effective for flow of liquid slag into the space between adjacent noncontacting pipes.

4,455,018
DOCUMENT FEEDER ELECTRONIC REGISTRATION GATE

Donald F. Colglazier, 103 Baylor Dr., Longmont, Colo. 80501; Donovan M. Janssen, 4750 Lee Cir.; John P. Mantey, 3980 Caddo Pkwy., both of Boulder, Colo. 80303, and James A. Valent, 1016 Berkeley Ct., Longmont, Colo. 80501

Filed May 11, 1981, Ser. No. 262,727
Int. Cl.³ B65H 9/20
U.S. Cl. 271—227 3 Claims



1. In a copier/duplicator having a frame with an exposure platen therein and a sheet handling apparatus mounted to said frame, said sheet feed apparatus being operable to place a document at a registration zone of the platen, the improvement comprising:

a sensor means disposed at an off-platen location and operable to generate output signals representative of the passage of a document;

means for generating a registration signal indicative of a zone whereat a document is to be registered on the platen;

a means for transporting the document including the sheet handling apparatus, said means operable to transport the document in a first direction beyond the sensor means and in a second direction away from said sensor means;

motor means operable to drive the sheet handling apparatus; and

a controller means operable to utilize the registration signal and the output signal correlating with the trailing edge of the document and to output control signals for driving the motor so that the document is placed at the registration zone.

4,455,019
EXERCISER FOR FINGER, HAND, WRIST AND FOREARM

John E. Harris, 4666 Longfellow Dr., New Orleans, La. 70127

Filed Jul. 12, 1982, Ser. No. 397,458
Int. Cl.³ A63B 23/00
U.S. Cl. 272—67 12 Claims

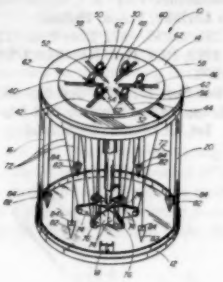
1. A finger, thumb, hand, wrist and forearm exerciser comprising:

a. a cylindrical frame having a circular base, a circular lid; a central upright support column, the longitudinal axis of said column being coincident with the longitudinal axis of said cylindrical frame; a hand supporting portion provided with an inverted cup centrally disposed on said lid, said lid having a plurality of radially extending slots, each of said slots having one finger-receiving loop extending therethrough;

b. a first set of pulleys mounted on said frame adjacent said hand supporting portion;

c. a second set of pulleys mounted on said frame remote from said hand supporting portion, each pulley of said second set having a single corresponding pulley in said first set;

d. a plurality of weight supporting cables each having finger receiving loops at a first end and weights attached to a second end, each of said cables being disposed around one of said first pulleys and one of said second pulleys for

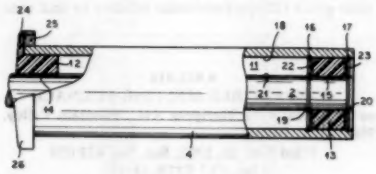


providing resistive force to fingers inserted through said loops and being flexed.

4,455,020
ROTATABLE HANDHOLD FOR ATHLETIC EQUIPMENT ESPECIALLY FOR BARBELLS

Josef Schnell, Sportweg 9, 8899 Peutenhausen, Fed. Rep. of Germany

Filed Mar. 8, 1982, Ser. No. 356,250
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1981, 3108830
Int. Cl.³ A63B 13/00
U.S. Cl. 272—123 5 Claims



3. A barbell comprising:

a weight carrying bar; and

respective tube sections fitted over opposite extremities of said bar and rotatable relative thereto, each tube section surrounding the respective bar extremity with clearance and having

a pair of elastic sleeves in said clearance interposed between the tube section and the bar,

means for axially fixing said tube section, said bar and at least one of said sleeves to limit relative axial displacement of each tube section and said bar while permitting relative rotation of the tube sections and the bar, said means for axially fixing said one of said sleeves of each tube section includes respective grooves formed in the tube section and the bar,

respective spring rings received in said grooves and forming shoulders in said clearance, and

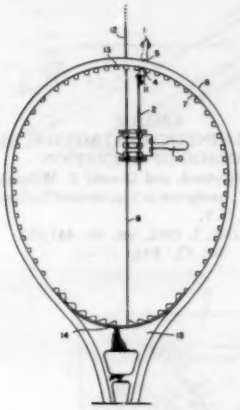
an axially effective spring between said one of said sleeves and said spring rings.

4,455,021

METHOD OF STRINGING OR RESTRINGING A TENNIS RACKET

David A. Berque, 8 Greenwoods Rd., Old Tappan, N.J. 07675

Filed Jun. 1, 1982, Ser. No. 384,091
Int. Cl.³ A63B 51/14
U.S. Cl. 273—73 A 1 Claim



1. A method of stringing or restringing a tennis racquet comprising the steps of: employing a bracket, said bracket having an elongated extension extending therefrom; clamping said bracket to said racquet such that the extension lies parallel and proximate to a string being strung; applying a clamp means simultaneously to said extension and to said string to be strung so as to temporarily retain said string against movement relative to said extension such that a predetermined tension can be maintained on said string.

4,455,022

MASTER SHAFT AND METHOD OF MAKING GOLF CLUB SHAFTS THEREFROM

Donald Wright, Beaverton, Oreg., assignor to Don Wright Golf Company, Beaverton, Oreg.

Filed Nov. 9, 1981, Ser. No. 319,137
Int. Cl.³ A63B 53/10
U.S. Cl. 273—77 A 6 Claims

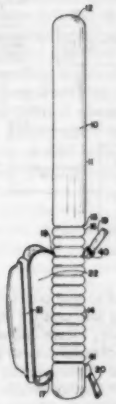
1. The method of making a golf club shaft, comprising forming a hollow, tapered master shaft of glass fiber impregnated with synthetic polyester resin and having an operative length of 55 inches, a wall thickness of 0.03–0.06 inch, a butt end having an outside diameter of 0.80–0.88 inch and a tip end having an outside diameter of 0.35–0.42 inch, and removing a portion of thelength of said master shaft from one or both ends thereof to produce a golf club shaft of predetermined length and flexure.

4,455,023

DUAL PURPOSE WEAPON FOR USE BY POLICE OFFICERS

George Saloom, 334 Church La., North Brunswick, N.J. 08902

Filed Feb. 24, 1983, Ser. No. 469,250
Int. Cl.³ F41B 15/02
U.S. Cl. 273—84 R 14 Claims



1. A dual purpose club-weapon for use by security personnel comprising:

a longitudinal rod member of a generally circular cross section and having near one end and adjustably secured thereto a flexible pouch member having a hollow containing a powdered metal particle material, to enable a user to insert his hand about said one end of said rod member and to adjust said pouch member to cover the outer surface of the user's hand to enable use of the pouch or rod to impart a blow to an assailant.

4,455,024

ELECTRONIC GAME APPARATUS

Mikio Yanagawa, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1982, Ser. No. 357,706
Claims priority, application Japan, Mar. 31, 1981, 56-48000
Int. Cl.³ A63F 9/00
U.S. Cl. 273—85 G 10 Claims

1. As electronic game apparatus which comprises:

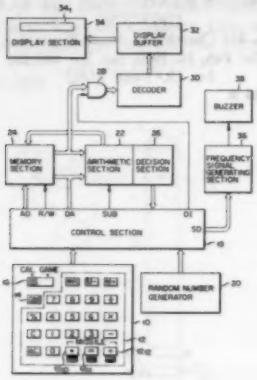
display means for displaying a plurality of signs;

memory means, connected to said display means, for storing at least target data to display a predetermined sign except part thereof among the plurality of signs, missile data for displaying a missile a shape of which corresponds to a non-displayed part of the predetermined sign so as to complete the shape of the predetermined sign, data for shifting the target and the missile, and data for scoring a point when the missile hits the target;

arithmetic and logic means, connected to said memory means, for calculating shift patterns of the target and the missile, for comparing a position of the non-displayed part of the target and a position of the missile, and for calculating the score when the position of the non-displayed part of the target and the position of the missile are judged to coincide;

control means, connected to said display means, said memory means and said arithmetic and logic means, for controlling at least data transfer from said memory means to

said display means, data transfer from said memory means to said arithmetic and logic means and from said arithmetic and logic means to said memory means, and arithmetic and deciding operation of said arithmetic and logic means; and



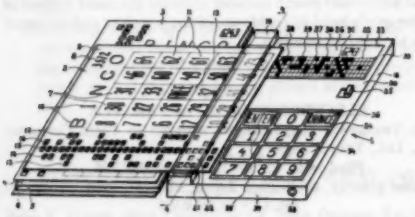
input key means, connected to said control means, for entering missile data, whereby said control means controls said display means, said memory means and said arithmetic and logic means on the basis of input data so as to allow performance of the game while displaying the movement of the target and missile at said display means.

4,455,025

ELECTRONIC CARD AND BOARD GAME

Yuri Itkis, 5163 Darting Bird La., Columbia, Md. 21044

Filed Sep. 11, 1981, Ser. No. 301,118
Int. Cl.³ A63F 3/06
U.S. Cl. 273—237 **16 Claims**



1. An electronic game board comprising a data input means including a keyboard and a remote data entry means, a data processing means including a data storage, a data output means including a display, and data transmission means;

said data processing means being responsive to said data input means and storing in said data storage bingo card numbers and a bingo pattern being played;

said data output means being controlled by said data processing means and signaling the current status of a bingo game;

said data input means inputting commands and data including called bingo numbers;

said called bingo numbers being independent of said bingo card numbers and said bingo pattern;

said status being determined by said data processing means as a result of a mutual comparison of said called bingo numbers with said bingo card numbers and with said bingo pattern;

in combination with at least one tangible bingo card being played with the help of said electronic bingo game board; and

said tangible bingo card bearing identification numbers and bingo numbers identical to said bingo card numbers stored in said data storage; and

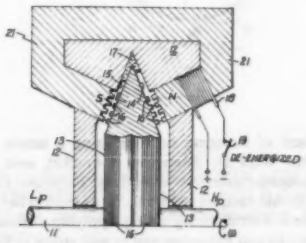
communication channel means operatively interconnecting remotely located means to said remote data entry means to deliver at least a portion of said commands and data from said remotely located means to said electronic game board via said remote data entry means.

4,455,026

VEE-SHAPED MAGNETIC/CENTRIFUGAL SEAL AND METHOD OF OPERATION

Oscar Pinkus, Guilderland, and Donald F. Wilcock, Schenectady, both of N.Y., assignors to Mechanical Technology Incorporated, Latham, N.Y.

Filed Dec. 7, 1982, Ser. No. 447,652
Int. Cl.³ F16J 15/42
U.S. Cl. 277—1 **9 Claims**



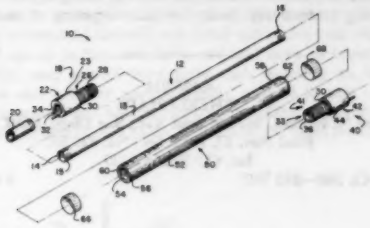
1. A combined magnetic/centrifugal seal for a rotating member rotatably supported within a housing, said rotating member having a generally circular cross section and an enlarged diameter cylindrical drum-like portion with at least one radially extending, generally Vee-shaped in cross section circumferential portion formed about the periphery of the enlarged diameter cylindrical drum-like portion, a plurality of radially extending circumferential teeth concentrically arrayed around the periphery of the enlarged diameter cylindrical drum-like portion in parallel relationship to said Vee-shaped circumferential portion on the rotating member on at least one side thereof and spaced closely adjacent thereto, said housing having a hollow complementary generally Vee-shaped and drum-like cross section portion within which the Vee-shaped and enlarged diameter cylindrical drum-like circumferential portions on the rotating member ride and in conjunction with the Vee-shaped and drum-like cross section portions define a space within which said concentrically arrayed circumferential teeth extend, a magnetically susceptible ferrofluid disposed within the space defined between the complementary Vee-shaped cross section portion of the housing and the Vee-shaped circumferential portion of the rotating member for forming a centrifugal seal during high speed rotation of the rotating member, said ferrofluid also communicating with the gaps formed by the concentrically arrayed circumferential teeth extending within the space defined between said complementary housing portion and the enlarged diameter cylindrical drum-like portion of the rotating member on at least one side of the Vee-shaped circumferential portion, and means for impressing a magnetic field across said last mentioned space to form a plurality of magnetic seal gaps thereacross within which said ferrofluid is trapped with said rotating member at standstill and at low rotating speeds to form a multi-stage seal on at least one side of the Vee-shaped circumferential portion.

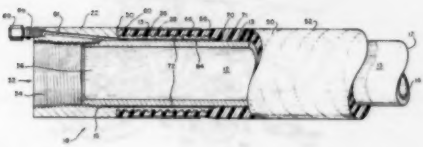
4,455,027

PACKER APPARATUS

Henry A. Baski, 1586 S. Robb Way, Denver, Colo. 80226

Filed Oct. 5, 1982, Ser. No. 432,812
Int. Cl.³ F16J 15/46
U.S. Cl. 277—34.6 21 Claims





1. Packer apparatus for packing off a portion of an elongated surrounding hole comprising:

an inner elongated tubular means having a cylindrical outer surface and a cylindrical elongated passage of relatively large diameter for enabling flow of fluids therethrough or placement of various structural members therein, said inner tubular means having a first threaded end portion with external threads on said cylindrical outer surface;

a first head means threadably mounted on said threaded end portion of said inner tubular means for connecting said apparatus to other associated structure and for attaching a gland means to said inner tubular means and having a body portion with a cylindrical outer surface of substantially larger diameter than said cylindrical outer surface of said inner pipe means, a sleeve portion extending axially from said body portion with a generally cylindrical outer surface of lesser diameter than said cylindrical outer surface of said body portion and of greater diameter than said cylindrical outer surface of said inner tubular means, a central elongated passage extending through said body portion and said sleeve portion of said first head means and comprising a threaded passage portion and a smooth passage portion,

said threaded passage portion in said central elongated passage in said first head means being located in said body portion and being threadably engaged with said first threaded end portion of said inner tubular means, and said smooth passage portion of said central elongated passage being located substantially in said sleeve portion and mounted circumjacent said cylindrical outer surface of said inner tubular means axially adjacent said threaded end portion of said inner tubular means;

a second head means mounted on said inner tubular means axially adjacent the end of said inner tubular means distel said first threaded end portion for connecting said inner tubular means to an elongated expandable and contractable cylindrical gland means and having a body portion with a cylindrical outer surface of substantially larger diameter than said cylindrical outer surface of said inner tubular means and having a sleeve portion extending axially from said body portion with a generally cylindrical outer surface of lesser diameter than said cylindrical outer surface of said body portion of said second head means and of greater diameter than said inner tubular means, and having a central elongate passage means extending through said second head means;

an elongated expandable and contractable cylindrical gland means comprising resilient material mounted circumjacent said inner tubular means for expansion under pressure into engagement with a portion of the surrounding hole and having a cylindrical outer surface of relatively large diameter approximately equal to the diameter of said cylindrical outer surfaces of said body portions of said coupling means, a cylindrical passage extending therethrough with a diameter approximately equal to the diameter of said outer cylindrical surface of said inner tubular means, opposite end portions mounted circumjacent said sleeve portions of said first and second head means in compressive sealing engagement therewith; band means mounted in compressive engagement with and circumjacent each end portion of said elongated expandable and contractable gland means in axial alignment with said sleeve portions of said head means for holding said end portions of said gland means in fixed axial relationship to said head means and for causing compressive sealing engagement therebetween;

expansion chamber means located between and defined by said outer cylindrical surface of said inner tubular means and an inner cylindrical surface of said gland means for receiving a quantity of fluid under pressure to cause expansion of said gland means;

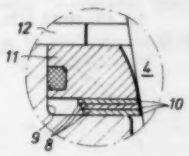
expansion fluid passage means in fluid communication with said expansion chamber means and sealed relative said inner tubular means cavity for supplying fluid under pressure to said expansion chamber means, said expansion fluid passage means comprising an annular fluid passage portion between said sleeve portion on said first head means and said outer cylindrical surface on said inner tubular means.

4,455,028

SEALING DEVICE WITH RADIALLY SLITTED METAL WASHERS FOR HYDRAULIC PISTON MECHANISMS

Ingvar Johansson, Lilla Edet, Sweden, assignor to Volvo Flygmotor AB, Trollhattan, Sweden

Filed Jun. 6, 1983, Ser. No. 501,307
Claims priority, application Sweden, Jun. 4, 1982, 8203484
Int. Cl.³ F16J 15/28, 9/00
U.S. Cl. 277—53 2 Claims



1. A sealing device for a piston of the type which is rigidly connected with the associated piston rod and which is adapted in a reciprocatory motion within an enclosing cylinder to be inclinable a small angle with its longitudinal axis relative the centre axis of the cylinder, said piston being intended for use in hydraulic mechanisms, particularly such mechanisms having high hydraulic fluid pressures, the sealing device being adapted to provide a seal between the cylinder wall and the piston and piston rod assembly and to comprise a plurality of metal sealing rings, characterized in that the sealing rings consist of three or more annular and radially slitted washers of sheet metal, said washers being arranged radially slidable in a common circumferential groove in the cylinder wall adjacent the piston rod end thereof for self-adjustment with its inner edge surface into sealing engagement with the outer peripheral

surface of the piston and piston rod assembly according to the varying inclined position of said assembly.

4,455,029

WHEEL CHAIRS

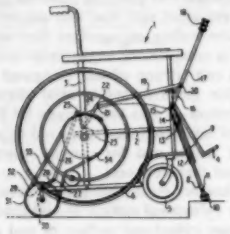
George Taylor, 2 Morton Carr Cottages, Nunthorpe, Middlesbrough, Cleveland TS7 OPE, England

Filed Mar. 22, 1982, Ser. No. 360,475

Claims priority, application United Kingdom, Apr. 3, 1981, 8110557

Int. Cl.³ B62B 5/02

U.S. Cl. 280—5.28 6 Claims



1. A wheel chair having main wheels of relatively large diameter and front wheels of relatively small diameter and further having forwardly extensible leg means and auxiliary rear wheel means, both said leg means and said rear wheel means being linked to an operating handle such that movement of said handle extends said leg means to lift the front of the chair to enable said front wheels to engage an upper surface of an obstacle and that movement of said handle also lowers the auxiliary rear wheel means, whereby the main wheels are lifted to the height of said upper surface of an obstacle, said auxiliary rear wheel means being drivable from said main wheels so as to advance the chair when said rear wheel means is lowered.

4,455,030

GOLF CART

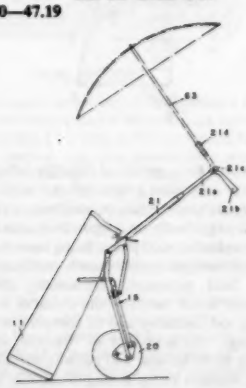
Göran Rosén, Franz Grödelstrasse, 5 Bad Nauheim, Fed. Rep. of Germany (6350)

Division of Ser. No. 247,098, Mar. 24, 1981, Pat. No. 4,396,205. This application Jan. 7, 1983, Ser. No. 456,352

Claims priority, application European Pat. Off., Jan. 2, 1981, 81200001.6

Int. Cl.³ B62B 1/26

U.S. Cl. 280—47.19 2 Claims



1. A golf cart of the type having a wheeled container with an opening for receiving golf clubs and golf appurtenances and a pull rod for pulling the cart, the improvement comprising a golf cart handle pivotably connected to the pull rod substantially perpendicular to the longitudinal axis thereof, and lockable in a plurality of rotational positions about the pull rod, said golf cart handle having an opening for receiving the handle of an umbrella, one of the rotational positions of the handle being adapted to position an umbrella fitted in said golf cart handle opening protectively about the entire opening of said container.

4,455,031

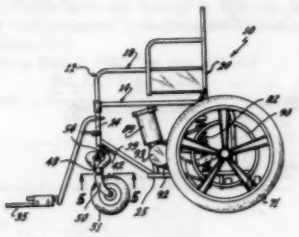
WHEELCHAIR

Wayne N. Hosaka, 1626 Walnut Ave., San Diego, Calif. 92103

Filed Nov. 27, 1981, Ser. No. 325,557

Int. Cl.³ B62M 1/00

U.S. Cl. 280—242 WC 6 Claims



1. A wheelchair comprising:

a chair frame having a pair of laterally spaced side frame assemblies, a seat frame assembly connected between said laterally spaced side frame assemblies, a pair of arm rest assemblies detachably attached to the top of said respective side frame assemblies, and a back rest assembly detachably connected between said arm assemblies;

a left front wheel and a right front wheel;

independent front wheel suspension means attached between the lower front end of said chair and said respective left and right front wheels comprising:

a laterally extending left front wheel support arm having said left front wheel attached thereto adjacent its free end and its opposite end being pivotally connected to said chair frame;

a laterally extending right front wheel support arm having said right front wheel attached thereto adjacent its free end and its opposite end being pivotally connected to said chair frame;

the elongated shape of each of said support arms is such that the pivot end of said arms initially travels along an x-axis and then curves outwardly away from said x-axis during its intermediate portion and then returns to said axis at the free end portion of said support arm; and

a support plate having laterally spaced brackets attached to its underside, the pivot ends of said support arms being pivotally connected to said brackets;

a left rear wheel and a right rear wheel; and

means connecting said rear wheels to said chair frame.

4,455,032

FRONT WHEEL SUSPENSION FOR A MOTOR TRICYCLE AND ASSOCIATED METHOD

Tsuneo Kajikawa, Kamifukuoka, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 2, 1982, Ser. No. 353,913

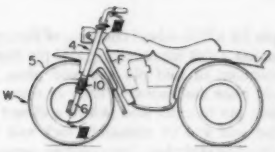
Claims priority, application Japan, Mar. 9, 1981, 56-32630

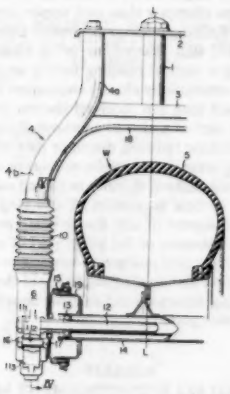
Int. Cl.³ B62K 25/04

U.S. Cl. 280—276 12 Claims

1. A front wheel suspension for a motor tricycle having a

frame with a head pipe, said suspension comprising a pair of front forks steerably supported on the head pipe, a pair of bottom cases slidably fitted on said front forks for retracting and extending movements, said forks and cases defining respective enclosed spaces, means for supporting a front wheel of the tricycle from said cases, a wide tire mounted on said front wheel, damper means disposed in each of said enclosed spaces for coupling said forks and cases to oppose relative sliding movements thereof, and a coil spring disposed in each of said spaces to bias said forks and said cases in expanding direction, said pair of front forks each including an upper portion, and a lower portion fixedly secured to said upper portion, each of said bottom cases being slidably engaged with a respective one of said lower portions of the front forks, said





upper portion of said front fork having a straight upper part and curved lower part integral with said upper part, said straight upper parts of the pair of forks extending upwardly parallel to each other with a relatively small spacing therebetween and connected to said head pipe, said curved lower parts being curved downwardly in a transverse plane away from one another to form a widened region for receiving said wide tire mounted on said front wheel,

said lower portion of the front forks being substantially straight and engated with said upper portion at the lower ends thereof.

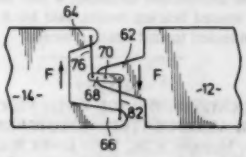
said means for supporting the front wheel comprising a front axle and side protrusions projecting from said bottom cases in the plane of the travel direction of the vehicle, said front axle being secured to said side protrusions.

4,455,033

TORQUE TRANSMITTING LINKAGE FOR ARTICULATED VEHICLE

Heinz W. Becker, Winnipeg; Fred S. Whitfield, and Dennis P. Chadwick, both of Napanee, all of Canada, assignors to Urban Transportation Development Corporation Ltd., Toronto, Canada

Filed Feb. 25, 1982, Ser. No. 352,231
Claims priority, application Canada, Feb. 26, 1981, 371784
Int. Cl.³ B60D 7/00
U.S. Cl. 280—403 **9 Claims**



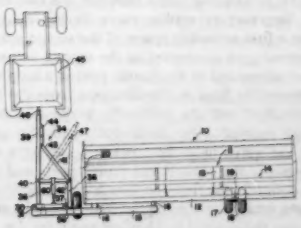
1. An articulated vehicle comprising a first chassis and a second chassis, each having an outboard end and inboard end, coupling means interconnecting said inboard ends ad including vertical pivot means to accommodate relative movement of said chassis about a vertical axis for steering movement of said vehicle and horizontal pivot means to accommodate relative pivotal movement of said chassis about a transverse horizontal axis for relative verticle movement between said outboard ends, said coupling means further comprising torque transmitting means vertically spaced from said horizontal pivot means and operable to inhibit lateral movement between said chassis, said torque transmitting means including a first link pivotally connected to one of said chassis for movement about a vertical axis and a pair of transverse links extending between said first link and said other chassis and being connected thereto by vertical pivot connections to permit movement of said transverse links in a generally horizontal plane, said transverse links being connected to said first link at spaced locations whereby said transverse links oppose pivotal movement of said first link to inhibit relative to lateral displacement of said first and second chassis.

4,455,034

TRANSPORT DEVICE FOR PULL-TYPE SWATHERS AND THE LIKE

Peter de Graff, and Donald Schweitz, both of Winnipeg, Canada, assignors to Canadian Co-Operative Implements Limited, Winnipeg, Canada

Filed Aug. 16, 1982, Ser. No. 408,240
Int. Cl.³ B60D 1/14
U.S. Cl. 280—415 R **18 Claims**



1. A pull-type field working farm implement which includes a main frame movable from a field position to a transport position and vice versa; comprising in combination a pivot frame pivotally connected to the main frame of the implement, a hitch assembly extending from said pivot frame and being

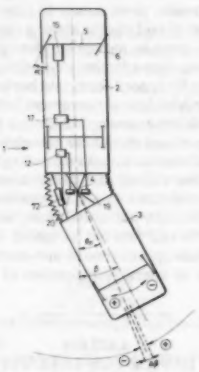
pivotally connected thereto for movement in a vertical plane and means to detachably lock said pivot frame to said main frame when in the field position, said pivot frame swinging substantially horizontally through approximately 90° when said means to detachably lock said pivot frame is released, said main frame including a substantially horizontal main member and a vertical hinge member at one end thereof, said pivot frame including a substantially vertical frame component, vertically situated hinges connected at one end of said frame component hingedly connecting to said vertical hinge member of said main frame around a substantially vertical axis, said vertical frame component including a pair of horizontal and horizontally spaced bearing means, said hitch assembly being pivotally connected to said bearing means.

4,455,035

ANTI-JACKKNIFING DEVICE WITH FRICTION BRAKE FOR ARTICULATED MOTOR VEHICLE

József Ivony, Hegedüs u. 50. 1133; István Ratskó, Zolyomi ut 13. 1118; György Karászy, Kökörcsin u. 2. 1113, and Jeno Mádi, Prodám u. 1. 1156, all of Budapest, Hungary

Filed Feb. 17, 1982, Ser. No. 349,674
Claims priority, application Hungary, Feb. 21, 1981, 426/81
Int. Cl.³ B62D *53/06*
U.S. Cl. 280—432 **5 Claims**



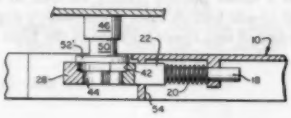
1. In an antijackknifing device for a motor vehicle having two articulated units with a friction brake therebetween having a hydraulic brake actuating cylinder, the improvement comprising hydraulic control means for controlling the torque applied by the brake including: first means comprising a hydraulic sensor actuating cylinder with two working spaces for sensing the jackknifing angle between the two units; a three-position four-way reversible valve having a first port connected to a first actuating space of the sensor actuating cylinder, a second port connected to the second actuating space, a third port connected to the fourth port in a loop with a check valve preventing flow in the direction from the third toward the fourth port and the hydraulic brake actuating cylinder connected between the third port and the check valve, wherein the valve in its first position connects the first and third ports and the second and fourth ports and in its second position connects the first and fourth ports and the second and third ports; means for sensing the steering angle; and means for determining the desired jackknifing angle for the sensed steering angle and in response to the deviation of the actual jackknifing angle from the desired jackknifing angle for actuating the valve into its first position when the actual jackknifing angle represents that the two units of the vehicle are overdriven in the clockwise direction and into its second position when the actual jackknifing angle indicates that the two units of the vehicle are overdriven in the counter-clockwise direction, whereby the brake will act to prevent a worse overdriven condition.

4,455,036

KING PIN FOR TRACTOR TRAILER FIFTH WHEEL COUPLING

William A. Barr, Gibson Island, Md. 21056

Filed Aug. 24, 1982, Ser. No. 410,915
Int. Cl.³ B62D *53/10*
U.S. Cl. 280—432 **2 Claims**



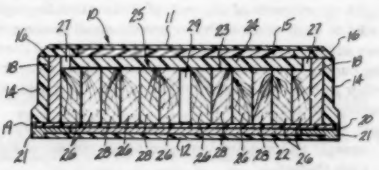
1. A king pin for a fifth wheel coupling of the type comprising a plate having a slot for receiving said pin during relative coupling movement of said pin and said plate, jaw means pivoted to said plate and movable from an open position enabling said king pin to enter said slot to a closed and locked position across said slot to releasably lock said king pin in coupled condition to said plate, jaw opeating means in the path of movement of said king pin into said slot arranged to be contacted by said king pin to effect automatic movement of said jaw means from its open to its closed and locked position, said king pin having a first upper cylindrical part for rigid attachment to the underside of a trailer, an intermediate cylindrical part of less diameter than said upper part, and a lower cylindrical part defining a flange of greater diameter than said intermediate part, said jaw means in its closed and locked position defining a vertical opening having an upper recessed part of a size to substantially closely encompass a portion of the upper part of said king pin received therein and a lower reduced diameter part of a size to substantially closely encompass said intermediate reduced diameter part of said king pin, said flange being arranged normally to engage said jaw means below the opening defined thereby in closed and locked position to prevent vertical separation of said king pin from said jaw means, the diameter of said flange being predeterminedly greater than the diameter of the upper part of said king pin as to prevent positively said jaw means moving to its fully closed and locked position about said flange should the latter contact said jaw operating means during relative coupling movement of said pin and said plate.

4,455,037

LAMINATED SKI REINFORCEMENT MEMBERS

Edward Pilpel, Manchester, and Franklin Meatto, Cromwell, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 4, 1981, Ser. No. 318,190
Int. Cl.³ A63C *5/12*
U.S. Cl. 280—610 **13 Claims**



1. In a snow ski of predetermined length with a wooden core with a known modulus of elasticity having a top surface, a bottom running surface bounded on its opposing sides by metal

edges and two opposing sides positioned generally perpendicularly to the top and bottom surfaces and intermediate thereof, the improvement comprising:

at least two reinforcement rib members positioned generally perpendicularly and connected to the top and bottom surfaces interiorly of the two opposing sides, the reinforcement rib members being formed from aluminum with a relatively high modulus of elasticity in comparison to the core giving a high ratio of the modulus of elasticity for the combined material of the reinforcement rib members and the wooden core to the density for the combined material of the reinforcement rib members and the wooden core so that an increased rate of return and a controllably designed natural frequency is imparted to the ski.

4,455,038

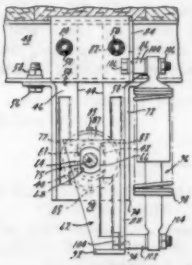
INDEPENDENT SUSPENSION FOR LIGHT TRAILERS

William H. Capler, Jr., 20701 Carlysle, Dearborn, Mich. 48124, and Melvin J. Cordts, 19730 Marilyn, Northville, Mich. 48167

Continuation of Ser. No. 185,271, Sep. 8, 1980, abandoned. This application Aug. 17, 1982, Ser. No. 408,791

Int. Cl.³ B60G *3/00*

U.S. Cl. 280—701 **1 Claim**



1. An independent wheel suspension for a light trailer having a frame comprising:

an axle assembly having means for rotatably attaching a wheel thereto;

a downwardly projecting track member affixed to said frame having a vertically disposed aperture guide formed within a flat plate structure, said axle assembly passing through said aperture guide and being vertically movable within said aperture guide;

an upper mounting bracket attached to said frame;

a lower mounting bracket attached to said axle assembly and movable therewith, said lower mounting bracket having a first surface extending vertically downward from said axle assembly and a second surface horizontally disposed forming a mounting flange located below said axle assembly, said second surface further being located below said track member; and

a single spring assisted shock absorber mounted between said upper mounting bracket and said mounting flange of said lower mounting bracket.

4,455,039

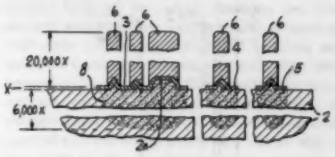
ENCODED SECURITY DOCUMENT

Edward H. Weitzen, Lawrence; Salvatore F. D'Amato, Floral Park, both of N.Y.; Robert M. Fleming, Weston, Mass.; Manfred R. Kuehnle, New London, N.H.; C. Frederick Ekman, Harvard, Mass.; Jurgen Kruse, Branford, Conn., and Harold J. Weber, Sherborn, Mass., assignors to Coulter Systems Corporation, Bedford, Mass.

Continuation of Ser. No. 85,259, Oct. 16, 1979, abandoned. This application Jun. 24, 1982, Ser. No. 391,690

Int. Cl.³ B42D *15/00*

U.S. Cl. 283—83 **29 Claims**



1. A security document of value having a mark detectable by apparatus responsive to electrical capacitance as a particular physical characteristic of the mark and thereby distinguishable from a counterfeit document lacking such a mark, comprising:

a substrate of a first material free from said physical characteristic,

a mark formed as a coating of a second material having said physical characteristic, said coating consisting of a particulate generally invisible very thin surface layer sputter-deposited on a portion only of one surface of said substrate and a sub-surface region below said very thin layer formed of discrete particles of said second material embedded within said first material arrayed in nonelectrically conductive relationship one relative to the others as a continuation of said thin surface layer, there being a greater number of particles of said second material in the sub-surface region than in the surface layer, the physical characteristic of said particulate material being electrical capacitance, said mark being nondetectable except by said apparatus and

visually observable matter overprinted on said document.

4,455,040

HIGH-PRESSURE WELLHEAD SEAL

Terry L. Shinn, Houston, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Aug. 3, 1981, Ser. No. 289,285

Int. Cl.³ F16L *39/00, 55/00, 19/00*

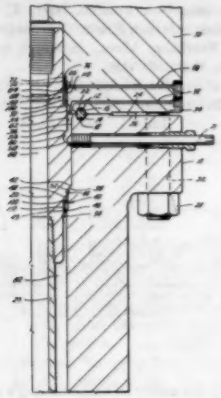
U.S. Cl. 285—142 **35 Claims**

1. A double-acting, pressure-enhancing metal seal ring for sealing engagement between an outer cylindrical wall surface of an inner tubular member and an inner cylindrical wall surface of an outer tubular member concentrically disposed around such inner tubular member in an annular space bounded from above and below by substantially parallel, tapered upper and lower compression surfaces, one of such compression surfaces being axially movable toward the other for compressing the seal ring therebetween, comprising:

a body having a cross section of parallelogram shape, said cross section having inner and outer sealing surfaces adjacent such outer and inner cylindrical wall surfaces, respectively, and upper and lower bearing surfaces adjacent such upper and lower compression surfaces, respectively, said upper and lower bearing surfaces being of slightly steeper taper than such adjacent compression surfaces;

said inner and outer sealing surfaces being forced radially inwardly and outwardly into sealing engagement with said outer and inner cylindrical wells, respectively, when such compression surfaces are forced toward each other

and said upper and lower bearing surfaces are rotated thereby into flush conformity with the taper of such adjacent compression surfaces;



said body having a high axial thickness to radial width ratio such that the cone angle of said cross sectional shape of said body remains substantially the same when said seal ring is subjected to axial compression loads; and

said body being made of a highly elastic and ductile metal.

4,455,041

HEAT RECOVERABLE COMPOSITE COUPLING DEVICE WITH TAPERED INSERT

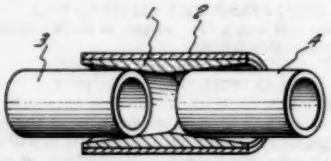
Charles L. Martin, Palo Alto, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 608,206, Aug. 27, 1975, abandoned, which is a continuation-in-part of Ser. No. 404,723, Oct. 9, 1973, abandoned, and a continuation-in-part of Ser. No. 404,724, Oct. 9, 1973, abandoned. This application Apr. 12, 1979, Ser. No. 29,212

Claims priority, application Sweden, Apr. 9, 1975, 7504070

Int. Cl.³ F16L *17/02*

U.S. Cl. 285—369 **9 Claims**



1. A composite coupling device for joining cylindrical substrates which comprises:

(a) a tubular heat-recoverable metallic compression sleeve; and

(b) a hollow tubular metallic insert sized for concentric disposition within said sleeve adapted to contact and form a secure connection between said cylindrical substrates when said sleeve is heated above its transition temperature, said sleeve effecting joinder of the substrates by deforming the insert when so heated, at least one principle surface of said insert being tapered and wherein said sleeve has a relatively uniform inside diameter and said insert has a relatively uniform outside diameter and an inside diameter that tapers from a maximum at either end to a minimum at about its mid-point.

4,455,042

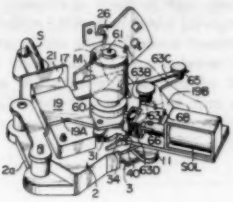
LATCH DEVICE

Shinjiro Yamada, Tokyo, Japan, assignor to Mitsui Kinzoku Kogyo K.K., Tokyo, Japan

Filed May 28, 1982, Ser. No. 383,100

Int. Cl.³ E05C *3/26*

U.S. Cl. 292—201 **7 Claims**



1. A latch device comprising: a latch mechanism which can be actuated to hold a striker in latched state and to release the same in unlatched state; a locking mechanism which can be actuated between lock and unlock positions respectively to hold the latch mechanism in said latched state and to place the same in said unlatched state, said locking mechanism including a shifting member movable between a terminal lock position and a terminal unlock position thereby to actuate the locking mechanism between the lock and unlock positions thereof; a driving power source for driving the shifting member between said terminal positions; a retaining mechanism for exerting an elastic force such as to cause the shifting member to undergo displacement between said terminal positions with a click motion over an intermediate dead-center point by overcoming an elastic resistance due to said elastic force up to the dead-center point and to retain the shifting member positively in either of the terminal lock and unlock positions after each displacement; and retraction means for temporarily nullifying or greatly reducing said action of the retaining mechanism at the time of said displacement of the shifting member.

4,455,043

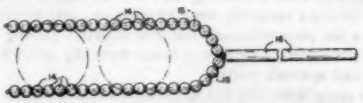
HOT GLASS HOLDING TOOL

Michael R. Sturm, 137 Ridgeway Dr., Bridgeport, W. Va. 26330

Filed May 20, 1982, Ser. No. 380,116

Int. Cl.³ B25J *1/02*

U.S. Cl. 294—19 R **7 Claims**



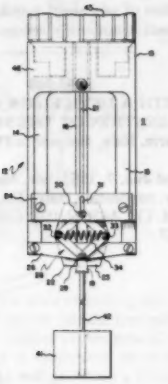
1. A tool for grasping and supporting blown or formed hot glass objects without checking or breaking them by thermal shock comprising a frame formed of round metal rod shaped to the object, a plurality of freely rotatable beads of non-heat conducting material strung on the rod in side-by-side relation so as to engage and support the object out of contact with the rod, the glass-engaging surfaces of the beads being shaped to minimize the area of contact between object and bead.

4,455,044

TOOL FOR PICKING UP AND INSERTING DIFFERENT LENGTH BOLTS

Bela L. Musits, Tolland, Conn., and Frank A. DeSantis, Delanson, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 18, 1981, Ser. No. 264,914
Int. Cl.³ B25B 27/00
U.S. Cl. 294—113 7 Claims



1. A tool for picking up and inserting different length bolts, screws, and similar fasteners comprising:

a tool housing;

a sliding push rod in said housing which has a socket at its lower end to accept the head of the fastener;

a pair of spring loaded jaws; and

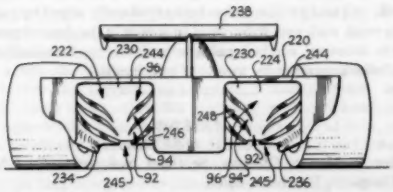
means for mounting said jaws on said housing to open and close and for limited swinging movement so as to pick up and hold the fastener between said jaws and to insert the fastener into an assembly in response to movement of said sliding push rod toward and between said jaws, said mounting means including a parallelogram linkage to which said jaws are pivoted.

4,455,045

MEANS FOR MAINTAINING ATTACHED FLOW OF A FLOWING MEDIUM

Gary O. Wheeler, 1080 Vallejo Cir., Costa Mesa, Calif. 92626

Filed Oct. 26, 1981, Ser. No. 314,735
Int. Cl.³ B62D 35/00
U.S. Cl. 296—1 S 53 Claims



1. Means to maintain flow of a flowing medium attached to the exterior of a flow control member having a flow control surface, said means including:

a first generally triangularly shaped channel submerged in the flow control surface, said triangularly shaped channel having:

an apex portion facing the flow of the flowing medium;

an end portion positioned downstream in the flow of flowing medium from said apex portion;

a floor surface extending from the flow control surface at said apex portion to said end portion;

a first sidewall extending between the flow control surface and said floor surface and extending between said apex portion and said end portion, said first sidewall forming a first sidewall edge between said first sidewall and the flow control surface, said first sidewall edge having a forward portion, a rearward portion, and a central portion, said first sidewall central portion being positioned out of alignment with the flow of the flowing medium; and

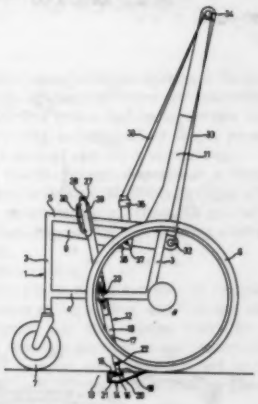
a second sidewall extending between the flow control surface and said floor surface and extending between said apex portion and said end portion, said second sidewall forming a second sidewall edge between said second sidewall and the flow control surface, said second sidewall edge having a forward portion, a rearward portion, and a central portion, said second sidewall central portion being positioned out of alignment with the flow of the flowing medium, whereby first and second counterrotating vortices form over said first and second sidewall edges in said first channel which thin the boundry layer of the flow of flowing medium at the adjacent flow control surface and provide turbulent mixing within said first channel so that the flow of flowing medium remains attached to the flow control surface and said floor surface.

4,455,046

SAFETY DEVICE FOR THE VEHICULAR TRANSPORT OF A PERSON TRAVELLING IN A WHEELCHAIR

Hans Linderoth, 4 Rue Mignard, Paris 16, France

Filed Apr. 13, 1981, Ser. No. 253,974
Claims priority, application France, Apr. 15, 1980, 80 08449
Int. Cl.³ B60N 1/02
U.S. Cl. 296—65 R 3 Claims



1. A safety device for transporting, in a vehicle, a person who is held in a wheelchair by a safety belt, said vehicle having a floor and being movable in a given direction of travel, said wheelchair having front and rear wheels and a frame which has upper and lower longitudinal bars, said safety device comprising:

an elongated holddown section set into the floor of the vehicle, transversely to the direction of travel of the vehicle, said section being in the shape of an upwardly open trough which has a front portion provided with a rearwardly extending flange which is level with the floor, said flange having a downturned lip,

two attachments each comprising an outer tube-like member and an inner rod-like member, means for rigidly securing each of said attachments to the upper and lower longitudinal bars of the wheelchair frame in a substantially vertical position at a location between the front and rear wheels of the wheelchair, said inner member being slidable with respect to said outer member and having a lower end projecting downwardly from the outer member, said lower end of the inner member being provided with a grip tab which extends forwardly and has an upwardly turned flange, said inner member having an upper end provided with actuator means operable by the wheelchair occupant for lowering said inner member with respect to said outer member to move said grip tab into said holddown section and for raising said inner member with respect to said outer member and locking it in a raised position where the upwardly turned flange of said grip tab is in hooked engagement with said downturned lip of said holddown section,

each said actuator means including an eccentric member which is pivotally connected to the inner member and has a circumferential surface which cammingly engages the upper end of the outer member, an operating lever secured to said eccentric member for operation by the wheelchair occupant, said operating lever being movable from a first position to a second position, said actuator means being operable to lower the grip tab when the lever is moved to said first position and being operable, when the lever is moved to said second position, to raise the grip tab into hooked engagement with the downturned lip of said holddown section.

4,455,047

VEHICLE SEAT HAVING AN ADJUSTABLE FEMUR SUPPORTER

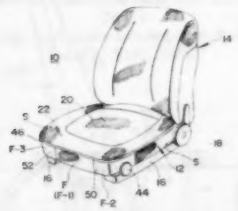
Hiroo Watanabe, Miura, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

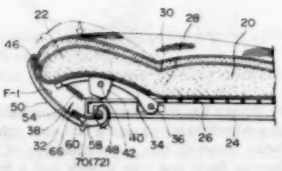
Filed Jun. 10, 1981, Ser. No. 272,340

Claims priority, application Japan, Jun. 16, 1980, 55-82856[U]

Int. Cl.³ A47C *3/00*

U.S. Cl. 297—284 **8 Claims**





1. A seat comprising:

a seat proper having a seat cushion proper and a frame on which said seat cushion proper is mounted;

means for moving the front section of said seat cushion proper up or down to a desired vertical position relative to said frame;

a sheet member having an upper section secured to said seat cushion proper and a lower section secured to said frame so that said sheet member covers the front peripheral portion of said seat proper, said sheet member spanning between said seat cushion proper and said frame in such a manner that it produces creases in said sheet member when said front section of said seat cushion proper takes a position lower than the uppermost vertical position relative to said frame; and

means for causing said creases to be concentrated at a given limited portion of said sheet member where the presence of such creases is not easily recognized.

4,455,048

SEATS WITH A DEVICE FOR LOCKING THE INCLINATION OF THE SEAT BACK

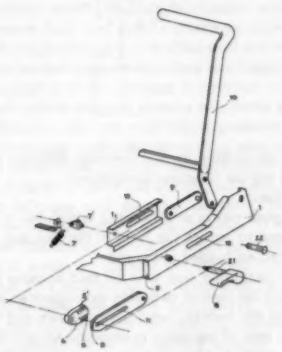
Alberto Bassi, Turin, Italy, assignor to ITW Fastex Italia S.p.A, Turin, Italy

Filed Jun. 7, 1982, Ser. No. 386,126

Claims priority, application Italy, Jun. 11, 1981, 22254 A/81

Int. Cl.³ A47C *1/024*; G05G *5/06*

U.S. Cl. 297—367 **4 Claims**



1. A seat including a device for locking a seat back in position having a desired inclination, and comprising a slider member slidable in a slideway provided in a seat base and pivoted at one end to a connecting rod which connects the slider member to the seat back, and a locking pawl member fixed to an axle which is journalled in the seat base and to which is also fixed a handle, said slider and pawl members each including a broad flat face in opposition to the other and each having at least two generally parallel series of arcuate teeth extending upwardly from said flat face and which movably mesh with a plurality of arcuate teeth in the opposing member's respective series of teeth, and said pawl member being resiliently urged by a spring into mesh with said slider so as to lock it in the desired position in the slideway, and being able to be disengaged manually from said slider member by means of said handle.

4,455,049

LATCH ASSEMBLY

Brian D. Martin, Glasgow, Scotland, assignor to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/GB81/00037, 371 Date Oct. 16, 1981, 102(e) Date Oct. 16, 1981, PCT Pub. No. WO81/02549, PCT Pub. Date Sep. 17, 1981

PCT Filed Mar. 4, 1981, Ser. No. 314,091

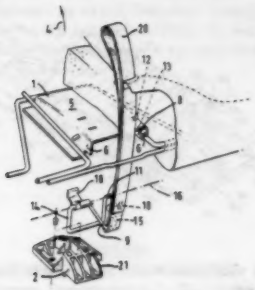
Claims priority, application United Kingdom, Mar. 5, 1980, 8007487

Int. Cl.³ E05C *19/06*

U.S. Cl. 297—379 **5 Claims**

1. A latch assembly comprising first and second members

mounted for movement towards and away from each other, a catch on qne of the members and a latch member on the other member releasably engageable with the catch to hold the two members together characterized in that the latch member comprises a wire shaped to define two lobes, each extending approximately in a radial plane from a common axis and terminating in a free end of the wire extending approximately parallel to the common axis and in that the free ends of the wire are fixed to the said other member in two spaced apertures formed therein so that rotation of either lobe about the common axis displaces the other lobe and generates a restoring force in the loop which biases the lobes towards their original positions.

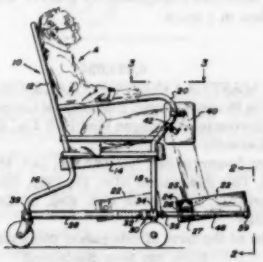


4,455,050

CLOT PREVENTING CHAIR AND ATTACHMENTS

John A. Kubek, 1938 Markham Dr., Bethlehem, Pa. 18017

Filed Jun. 22, 1981, Ser. No. 275,797
Int. Cl.³ A47C *7/50*
U.S. Cl. 297—430 **2 Claims**



1. In an invalid chair of the type including a generally vertically back support, a generally horizontal seat, two arm rests and four legs, the improvement comprising:

(a) a box-like single, open top, foot enclosure adapted to receive and support both feet of a seated person, said enclosure being adjustable vertically to elevate knees and thighs off the chair seat, thereby releasing blood flow, and wherein said enclosure is pivotally mounted at its forward toe supporting end and vertically adjustable at its rear angle supporting end to allow a user's foot angular adjustment, said foot support also including, at its forward lower external edge, a box hinge to permit its pivot, and on each box side a vertically adjustable, mounted roller adapted to ride, one each on a telescopic brace;

(b) a pair of telescoping braces to allow said foot support to be retracted beneath said chair for storage, each said brace attached at its one end to said box enclosure and passing between said chair front legs to attach at said other end pivotally to said chair rear legs to allow said foot support to also be raised and lowered relative to the chair seat height;

(c) a pair of brackets attached, one to each of said telescoping braces, at a point on said brace adjacent the intersection of said brace and a corresponding chair front leg, said bracket including means to releasably attach said bracket to said leg; and,

(d) a pair of knee supports cooperating with said foot support to hold said user's legs in body aligned position, each of said knee supports including a generally planar body contacting surface and bracket means, said bracket means adapted to releasably mount said supports, one on each of said chair arm rests so that when seated, a user's knees are urged together,

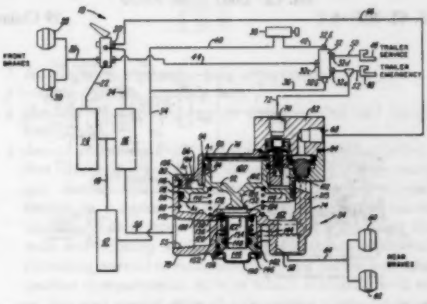
thereby facilitating alignment of the user's feet in said foot support.

4,455,051

RATIO CONTROL VALVE FOR TRACTOR REAR AXLES

Edward J. Falk, St. Louis, Mo., assignor to Echlin Inc., Branford, Conn.

Filed Jun. 15, 1981, Ser. No. 273,865
Int. Cl.³ B60T *8/18, 8/26*
U.S. Cl. 303—6 C **5 Claims**



1. A ratio control valve for a brake system of the type having a control pressure application valve for controlling brake pressure to tractor rear brakes and trailer service brakes, said trailer brakes receiving an independent supply pressure from said tractor brake system, said valve comprising:

(a) a stepped reaction piston disposed in a housing, said reaction piston having a first surface defining a first effective area, a second surface defining a second effective area, and a third opposed surface defining a third opposed effective area;

(b) an inlet-exhaust valve;

(c) said reaction piston being movable in response to said control pressure acting against said first and second surfaces to operate said inlet-exhaust valve for metering independent reservoir pressure to said tractor rear brakes, said metered pressure also being applied to said third surface for force balancing of said reaction piston to control the metering of pressure;

(d) passage means for the ingress of control pressure to act upon said first surface;

(e) a check valve for controlling the application of said control pressure to said second surface;

(f) said check valve being opened and closed by the displacement of an emergency signal piston connected thereto;

(g) said piston being displaceable to a position for opening said check valve whenever the trailer supply pressure is present;

(h) said emergency signal piston being displaceable into a position for closing said check valve in the absence of the trailer supply pressure; p1 (i) resilient means for biasing said emergency signal piston into the check valve open

pisition until a first predetermined control pressure is reached; and

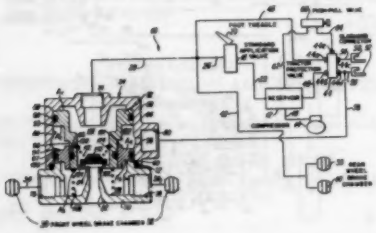
(j) a blend back valve means for controlling the application of pressure to said second surface above a second predetermined control pressure whenever said check valve is closed; said blend back valve means being biased into closed position by the force of the independent reservoir pressure acting upon a blend back valve piston connected to said blend back valve means.

4,455,052

TRACTOR AIR BRAKE SYSTEM AND CONTROL VALVE MEANS THEREFOR

Richard C. Bueler, Des Peres, Mo., assignor to Echlin Inc., Branford, Conn.

Filed Aug. 7, 1981, Ser. No. 290,846
Int. Cl.³ B60T *8/26, 15/36*
U.S. Cl. 303—6 C **19 Claims**



1. In a tractor having front wheels brakes and rear wheel brakes, a tractor air brake system comprising:

(a) a source of service and emergency air pressure;

(b) front brake actuators for actuating said front wheel brakes;

(c) rear brake actuators for actuating said rear wheel brakes;

(d) an application valve for delivering service air pressure from said source to front and rear brake actuators;

(e) control valve means, connected between said application valve and said front brake actuators, operating in a first mode to reduce the service air pressure delivered to said front brake actuators relative to the service air pressure delivered to said rear brake actuators when the tractor is operated with a trailer and said tractor air brake system is connected to the trailer brake system;

(f) said control valve means operating in a second mode to control the service air pressure delivered to said front brake actuators when the tractor is operated without a trailer;

(g) said control valve means, when operating in said first mode prevents the delivery of service air pressure to said front brake actuators until the service air pressure being delivered to said rear brake actuators reaches a predetermined level; and,

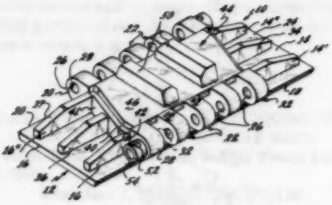
(h) said control valve means, when operating in said first mode, functions to deliver service air pressure to said front brake actuators at a faster rate than service air pressure is delivered to said rear brake actuators as the service air pressure being delivered to said rear brake actuators is increased from said predetermined level to another, higher predetermined level.

4,455,053

FABRICATED HINGE TRACK SHOE

Robert Rasmussen, Rancho Palos Verdes, Calif., assignor to Industrial Parts Depot, Torrance, Calif.

Filed Jan. 28, 1982, Ser. No. 343,519
Int. Cl.³ B62D *55/20*
U.S. Cl. 305—53 **9 Claims**



1. A track shoe suitable for manufacture from sheet metal stock comprising:

a bottom plate having an upper side, a lower side, two ends, and a pair of opposite edges extending between said ends;

a plurality of elongated linkage members of uniform thickness aligned in parallel spaced relationship along said edges, each linkage member having two parallel end portions connected by an intermediate portion angling therebetween, such that the ends of said linkage members are staggered alternately on each of said edges;

aligned bores formed in the ends of said linkage members for receiving a hinge pin adjacent to each of said edges;

at least one pair of brace plates secured between said bottom plate and at least one pair of said linkage members for bracing said linkage members; and,

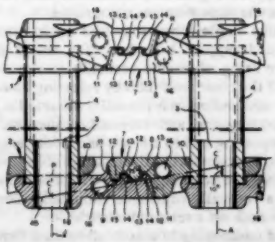
drive lug means secured to at least one pair of said linkage members, said drive lug means including one or more guide members engageable by a drive wheel for driving said shoe in a track.

4,455,054

MASTER LINK FOR TRACK CHAIN

Hansjoachim Brunn, Damme, Fed. Rep. of Germany, assignor to Firma Intertractor Viehmann GmbH & Co., Gevelsberg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 197,124, Oct. 15, 1980, Pat. No. 4,361,364. This application Mar. 19, 1982, Ser. No. 359,710
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1980, 3013026
The portion of the term of this patent subsequent to Nov. 30, 1999, has been disclaimed.
Int. Cl.³ B62D *55/20*
U.S. Cl. 305—58 R **9 Claims**



1. A master link for a track chain, comprising:

two parallel cheeks interconnected at their ends by respective pintles coupling same to adjoining chain links for

relative swinging about pivotal axes transverse to said cheeks, each of said cheeks being split into a pair of separable link parts with mating teeth projecting from contact surfaces perpendicular to said pivotal axes and having undercut flanks urging said teeth of each pair of link parts into firmer engagement with each other under a tension acting longitudinally upon said cheeks; and

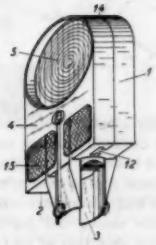
a track shoe fastened to all said link parts by respective bolts extending parallel to said contact surfaces, said link parts being disengageable from each other upon a removal of said bolts and relaxation of said tension.

4,455,055

CABINET FOR BLINK LIGHT

Per Neesbye-Hansen, Damgaardsvej 11, DK-2930 Klampenborg, Denmark

Filed Feb. 22, 1982, Ser. No. 350,612
Claims priority, application Denmark, Feb. 20, 1981, 758/81
Int. Cl.³ A47B *77/08*; G09F *13/00, 7/02*
U.S. Cl. 312—223 **4 Claims**



1. A cabinet for warning blink lights and adapted to contain a light source and photosensitive means for controlling the blinking of said light source, said cabinet being mountable on a stand or column and comprising:

a shroud having a top, a bottom and front and rear major surfaces, each of said major surfaces having a light transmissive portion, said bottom surface being adapted for mounting on a stand or column,

said shroud comprising two interlocked identical half parts, each half part comprising one of said major surfaces and a portion of each of the other surfaces of said shroud, each half part having a central axis bisecting the major surface thereof and extending between said top and bottom surfaces,

each half part having a pair of unequal height parallel internal ribs disposed adjacent said central axis and extending from the major surface of said half part, said ribs being disposed on opposite sides of said central axis and extending in a direction parallel thereto,

the end surface of the high rib of each half part mating with the end surface of the low rib of the other half part,

at least one of the bottom and top surfaces of each half part having (i) a projection of interlocking shape extending away from the major surface thereof and disposed on one side of said central axis, and (ii) a recess of corresponding interlocking shape disposed on the opposite side of said central axis and extending toward said major surface,

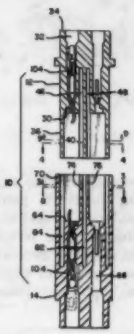
so that the projection of each of said half parts interlocks with the recess of the other half part.

4,455,056

MULTI-PIN HIGH VOLTAGE CONNECTOR

Henry O. Herrmann, Jr., Elizabethtown, and Reuben E. Ney, Mt. Joy, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 142,941, Apr. 23, 1980, abandoned.
This application Apr. 26, 1982, Ser. No. 371,406
Int. Cl.³ H01R *13/50, 13/53*
U.S. Cl. 339—91 R **17 Claims**



7. An electrical connector plug comprising:

a housing defining a mating face,

a plurality of contact passages opening onto said mating face,

a shroud extending from said mating face and including a first closed peripherial wall uninterruptedly encompassing said mating face and adapted to receive a receptacle therein in a mated condition and a plurality of second walls extending from said mating face within said first wall and defining a plurality of adjacent pairs of walls extending normal to each other forming partial individual contact compartments each of which is coaxial with and on first and second sides of a respective contact passage,

a patterned array of grooves in said mating face, said grooves being in adjacent pairs extending normal to each other and lying on third and fourth sides of each respective contact passage each said groove lying adjacent a wall of said shroud and being adapted to receive therein a corresponding wall of a shroud of a mating receptacle member, at least one of said adjacent pairs of normally extending walls or grooves being interconnected and

a like plurality of electrical terminals each terminating a respective conductor and mounted in a respective contact passage wherein in an unmated condition said shroud substantially encloses each terminal which is recessed within making it impossible to make contact with said terminals and in a mated condition said walls are received in grooves in a mating connector to form an extremely long creepage path.

4,455,057

INSULATION PIERCING TERMINAL

Remo Mariani, Toms River, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Dec. 21, 1981, Ser. No. 332,715
Int. Cl.³ H01R *4/18*
U.S. Cl. 339—97 C **8 Claims**

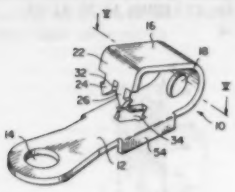
1. A unipartite electrical terminal for piercing, securing and making electrical contact with a wire having a conductor and outer insulation on said conductor comprising:

a body having an opening for receiving said wire and terminal connecting means thereon;

a movable member depending from and projecting over said body;

said movable member being movable into engagement with said body;

first contact means on said body for retentive receipt of said wire and having insulation piercing members for piercing said outer insulation and electrically contacting said conductor upon retentive receipt of said wire; and



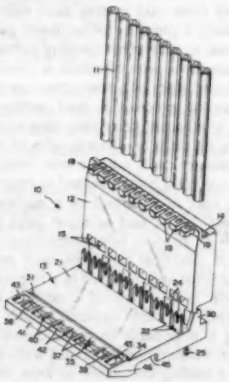
second contact means on said movable member for engaging said wire and having insulation piercing portions for piercing said outer insulation of said wire and electrically contacting said conductor, said second contact means further including a securement member for locking said second contact means into direct engagement with said first contact means said upon movement of said movable member.

4,455,058

ELECTRICAL CONNECTOR FOR FLAT CABLE

Donald R. Harner, Camp Hill; Robert C. Kaley, Landisville, and Christopher L. Crawford, Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 31, 1982, Ser. No. 364,152
Int. Cl.³ H01R *4/24*
U.S. Cl. 339—99 R **4 Claims**



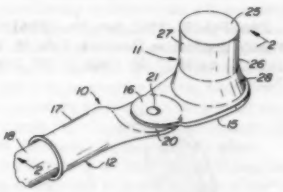
1. A two-piece electrical connector housing for terminating flat cable comprising a base member and a cable locating member pivotally connected to the base member and having a cable-receiving pocket, a series of electrical terminals mounted on the base member adjacent the pivotal connection and having insulation penetrating, conductor engaging portions projecting towards the pocket so that, with the connector in an open condition, in which the cable locating member is remote from the base member, flat cable can be located in the pocket and subsequent pivotal movement of the locating member towards the base member to place the connector in a closed condition will drive the conductor engaging portions into the cable to establish electrical connections with respective conductors of the cable, the base member and the locating member being provided with interengageable latching means comprising a resiliently flexible latch bar and a resiliently flexible release bar extending spaced apart in side-by-side relation and supported for deflection adjacent an end of one member and interconnected by a plurality of transverse struts defining an eye, and catch means on the other member receivable in the eye in latching engagement with the latching bar in the closed condition, the latch bar being spaced from the one member by an elongate slot extending for a majority of the length of the latch bar and joined at respective opposite ends of the slot to the one member by relatively rigid webs, movement of the release bar towards the latch bar flexing the latch bar towards the one member thereby to disengage the catch means from the latch bar.

4,455,059

TERMINAL CAP FOR ACCOMMODATING TERMINAL POSTS

Werner C. Theiler, Dix Hills, N.Y., assignor to American Eyelet Co., Inc., Bayshore, N.Y.

Filed Dec. 10, 1981, Ser. No. 329,612
Int. Cl.³ H01R *11/26*
U.S. Cl. 339—224 **9 Claims**



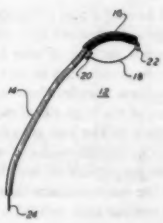
1. A connector cap for a battery terminal post or the like, said cap comprising a circumferentially continuous tubular outer sleeve end portion having a longitudinal taper less than that of the battery terminal post, a circumferentially continuous tubular inner sleeve end portion extending longitudinally inwardly from said outer sleeve end portion and having a longitudinal taper greater than that of said outer sleeve end portion to flare longitudinally inwardly relative to said outer sleeve end portion, and a circumferentially continuous radial flange on the inner end of said inner sleeve end portion, said inner sleeve end portion being adapted for snug continuous circumposition about the battery terminal post in firm frictional engagement therewith.

4,455,060

RING LASER GYRO CATHODE CONNECTION

James G. Koper, and Bo H. G. Ljung, both of Wayne, N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Jul. 14, 1982, Ser. No. 398,037
Int. Cl.³ H01R *13/12*
U.S. Cl. 339—252 S **3 Claims**



1. A cathode assembly for a ring laser gyro, including a cathode post having an annular portion, and including an

electrical connector mounted on said post annular portion, said electrical connector comprising:

a generally circular ring mounted on said post annular portion, said ring being circumferentially divided, said ring having first and second spaced junctions disposed on diametrically opposite sides thereof for forming a first partial circumference and a second partial circumference, said first partial circumference being a helical spring defining a helix and said second partial circumference being a loop of wire; and

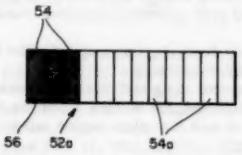
an electrical cable having one end connected to said ring at said second junction, where the portion of said cable adjacent said end is connected to said second junction and is positioned in and extends through the interior of said helix of said helical spring from said second junction to said first junction, and where said electrical cable is an insulated cable comprising an inner electrical conductor and an outer insulated covering.

4,455,061

MULTI-FACETED HOLOGRAPHIC OPTICAL ELEMENT AND METHODS OF MAKING AND USING SAME

Steven K. Case, St. Louis Park, Minn., assignor to The Regents of the University of Minnesota, Minneapolis, Minn.

Filed Jul. 31, 1980, Ser. No. 174,156
Int. Cl.³ G03H 1/22
U.S. Cl. 350—3.75 **16 Claims**



1. A holographic system comprising a holographic optical element formed with a plurality of relatively small rectangular facets, the edges of adjacent facets being contiguous with each other and each facet containing a desired grating pattern therein representative of a portion of a complete and more complex pattern, the grating pattern of each facet extending to the edge thereof and hence to the edge of the next adjacent facet so that the plurality of relatively small facets, in combination, form a relatively complex interference pattern representative of said complete and more complex pattern of which each grating pattern is but a portion, and means for illuminating the facets of said optical element to derive a complete and more complex image directly from said complete and more complex pattern containing information representatively embodied in said relatively complex interference pattern.

4,455,062

Patent Not Issued For This Number

4,455,063

LUNEBURG LENS FOR WAVEGUIDE WITH GRADED INDEX PROFILE

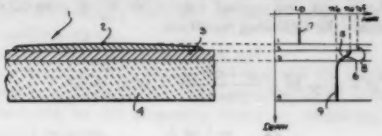
Van E. Wood, Delaware, and Richard P. Kenan, Upper Arlington, both of Ohio, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1981, Ser. No. 254,472
Int. Cl.³ G02B 5/174
U.S. Cl. 350—96.12 **4 Claims**

4. A Luneburg lens device comprising:

a waveguide having a graded-index distribution approximated by a Gaussian shape; and

a Luneburg lens overlay on said waveguide, said overlay having a thickness T(R) as follows:



$$T(R)=\frac{\Lambda}{V}(c-b)^{1/2}\tan^{-1}\left[\frac{\alpha_1(\tau+1)\ \alpha_2(\tau\ \ 1)}{\tau+1+\alpha_1\alpha_2(\tau\ \ )}\right]$$

when $N(R)<n_s$; and

$$T(R)=\Lambda/V(c-b)^{-1/2}[\tan^{-1}\alpha_1+\tan^{-1}\alpha_2]$$

when $N(R)>n_s$ where:

N(R): mode index in the Luneburg Lens;

n_s: index at the waveguide surface

n_b: index deep inside the waveguide

Λ: diffusion length where refractive index change is assumed to follow Ti concentration

$\alpha_1=[(a+b)/(c-b)]^{1/2}$

$\alpha_2=[(b-1)\mathrm{sgn}(b-1)/(c-b)]^{1/2}$

$\tau=\tan\ VI_1$

$V=K_o\Lambda\sqrt{n_s^2-n_b^2}$

$a=(n_b^2-1)/(n_s^2-n_b^2)$

$b=([N(R)]^2-n_b^2)/(n_s^2-n_b^2)\ c=(n_f^2-n_b^2)/(n_s^2-n_b^2)$

$$I_1=\int_o^{\xi}[\exp(-x^2)-b]^{1/2}dx$$

$\xi=(-\log_e b)^{1/2}$

$K_o=2\pi/\lambda$

n_f: refractive index of lens material

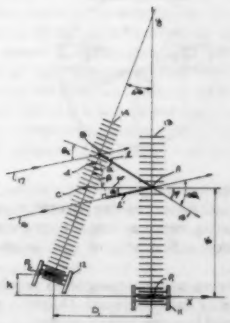
λ: wavelength of light used.

4,455,064

SURFACE ACOUSTIC WAVE TRANSDUCER ARRAY FOR A GUIDED-WAVE ACOUSTOOPTIC DEVICE

Richard P. Kenan, Columbus, Ohio, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 5, 1982, Ser. No. 337,313
Int. Cl.³ G02F 1/00
U.S. Cl. 350—96.13 **1 Claim**



1. In an optical waveguide, a surface acoustic wave transducer array for diffracting a light beam which propagates in the waveguide with substantially uniform diffraction efficiency over the full bandwidth, said transducer array comprising:

a first transducer; and

a second transducer adjacent to and on the incident side of

the light beam from said first transducer, said first transducer and said second transducer being positioned to satisfy the following equations:

$$D = y_0 \sin \Delta\theta + \frac{m \lambda \cos \psi}{2 \sin^2 \theta_c} + m' \Lambda_c \sin \Delta\theta$$

$$h = 2 y_0 \sin^2 \frac{\Delta\theta}{2} + \frac{m \lambda \sin \psi}{2 \sin^2 \theta_c} - m' \Lambda_c \cos \Delta\theta$$

where:

$$\Delta\theta = \theta_2 - \theta_1$$

$$\psi = 2\theta_c - \theta_1$$

and:

D is the distance between said first and second transducers in the direction normal to the propagation of a surface acoustic wave from said first transducer; h is the distance between said first and second transducers in the direction of the propagation of the surface acoustic wave from said first transducer;

y_0 is the distance between the center of said first transducer and the interaction point where a ray being in or near the center of the light beam interacts with the surface acoustic wave launched by said first transducer;

m and m' are integers;

Λ_c is the acoustic wavelength at the crossover frequency of said transducers;

λ is the wavelength of light in said optical waveguide;

θ_1, θ_2 are the Bragg angles at the center frequency for said first and second transducers; and

θ_c is the Bragg angle at the crossover frequency of said transducers.

4,455,065

OPTICAL DEVICE

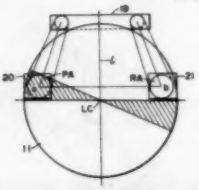
Yukichi Niwa; Mitsutoshi Ohwada; Yasuo Ogino, all of Yokohama; Kazuo Tanaka, Tokyo, and Noboru Koumura, Narashino, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1981, Ser. No. 282,037

Claims priority, application Japan, Jul. 15, 1980, 55-96593; Sep. 25, 1980, 55-134112

Int. Cl.³ G02B *27/00*

U.S. Cl. 350—445 **31 Claims**



1. An optical device including:

(a) an imaging optical system having an optical axis;

(b) radiation projecting means arranged to project radiation outwardly through a first area of said imaging optical system; and

(c) radiation receiving means arranged to receive the reflected radiation of said projected radiation through a second area of said imaging optical system;

said second area being set outside of two fan-shaped areas which are defined by two linearly extended lines, each connecting the optical axis and a point located at an outermost position of said first area as viewed from said optical axis.

4,455,066

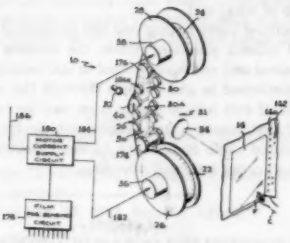
TRANSPORT FOR DISPLAY TERMINAL

Roy H. Olson, Palos Verdes Estates; Tor H. Petterson, Rancho Palos Verdes, and William E. Roberts, Rolling Hills Estates, all of Calif., assignors to Logicon, Inc., Torrance, Calif.

Filed Dec. 10, 1979, Ser. No. 101,627

Int. Cl.³ B65H *23/18*; G03B *23/08, 23/12*

U.S. Cl. 353—26 R **1 Claim**



1. A terminal comprising:

a first reel;

a second reel;

a strip of photographic film having a multiplicity of frames spaced along its length, said film having opposite ends forming rolls, each roll wound about one of said reels, and said film extending along a predetermined path between said reels, said path including a predetermined film plane region;

means for sharply displaying the image of a film frame lying at said film plane region;

guide means disposed along said film path outside the frame area being displayed, for holding a portion of said film substantially at said film plane region when said film is under tension;

first and second motors coupled respectively to said first and second reels to cause them to rotate in directions to wind film thereon;

means for energizing said motors, said energizing means being operable to energize said motors at levels that apply torques proportional to the diameters of the film rolls on said reels, so that equal pulling forces are applied to the film on opposite sides of the film plane region, whereby to maintain the film both stationary and under tension;

said film including frame identification markings beside at least some frames that identifies those frames; and

frame identification detecting means responsive to the markings of a film frame which lies at said image displaying means, for generating a signal indicating a particular film frame; and wherein

said motor energizing means includes logic means responsive to said signal indicating a particular film frame, for adjusting the relative levels of current supplied to said motors when the film is stationary.

4,455,067

METHOD OF MODIFYING SLIDE TRANSPARENCIES SO AS TO PROVIDE UNIFORM ILLUMINATION IN ANGULAR PROJECTION

Kurt H. Hoppmann, Falls Church; James G. Lin, and Peter G. Hoppmann, both of Springfield, all of Va., assignors to Hoppmann Corporation, Chantilly, Va.

Filed Jul. 29, 1980, Ser. No. 173,252

Int. Cl.³ B03B *21/00*

U.S. Cl. 353—69 **2 Claims**

1. Method for correcting non-uniform illumination in oblique projection of slide transparencies, comprising:

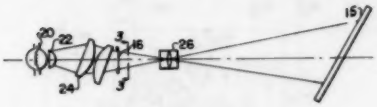
A. Modifying a slide transparency of an obliquely positioned object by illuminating the object such that the portion farthest from the camera receives the greatest portion of

light and the portion nearest the camera receives the least light;

B. Taking a picture such that the slide transparency defines the object being photographed in trapezoidal form with the wider base being the least illuminated and the narrow apex being the greatest illuminated;

C. Supporting the modified slide transparency within a projection system;

D. Selectively illuminating with an intensified light source by tilted condensing and collimating of light towards said transparency, such that the optical path is narrowed and



its axis diverted towards the lower portion of said transparency, such that a greater portion of light is projected through the lower portion of the transparency and a lesser portion of light is projected through the upper portion of the transparency;

E. Magnifying the light projected as an image through said transparency; and

F. Displaying the image upon an angularly supported viewing screen, such that the farthest portion of the viewing screen receives the greater portion of light and the nearest portion receives the lesser light.

4,455,068

CAMERA CAPABLE OF PROGRAMMED EXPOSURE CONTROL

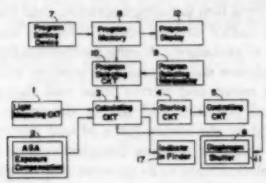
Koichi Izuhara, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

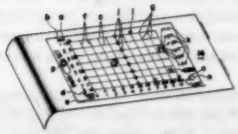
Filed Dec. 11, 1981, Ser. No. 329,748

Claims priority, application Japan, Dec. 11, 1980, 55-175393

Int. Cl.³ G03B 7/097

U.S. Cl. 354—412 **18 Claims**





1. A camera capable of programmed exposure control, in which a combination of the aperture size and the exposure time is automatically determined in a pre-programmed manner in response to the result of light measurement, comprising:

means for measuring light to produce a light measuring signal;

means for displaying a program to the user representing a relationship of a variety of possible values of the light measuring signal to various combinations of the aperture size and the exposure time, respectively;

means associated with the camera for optionally setting up a desired program by the operator, said setting means being capable of visually composing the desired program on the displaying means;

means for storing the set program; and

means for controlling the aperture size and the exposure time in response to the light measuring signal actually produced by the measuring means by consulting the stored program.

4,455,069

CAMERA WITH EE LOCK

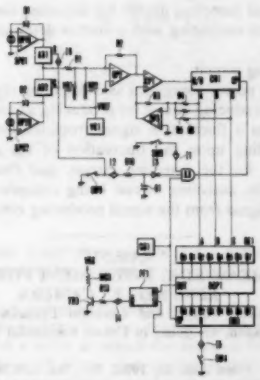
Masaharu Kawamura, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 12, 1982, Ser. No. 407,476

Claims priority, application Japan, Aug. 20, 1981, 56-131302; Aug. 20, 1981, 56-131303

Int. Cl.³ G03B 7/091

U.S. Cl. 354—434 **13 Claims**



1. A camera allowing EE lock photography, comprising:

(a) a light measuring circuit having a first light measuring mode suitable for ordinary photography and a second light measuring mode suitable for EE lock photography; and

(b) EE lock select means for changing the mode of the light measuring circuit from a first mode to a second mode; and

(c) an exposure control circuit having a memory means, said memory means being arranged upon selection of the second mode of said light measuring circuit by said EE lock select means to memorize a signal corresponding to that output of said light measuring circuit which occurred when said EE lock select means operated, and upon leaving said EE lock select means inoperative to memorize a signal corresponding to that output of said light measuring circuit which occurred when a release member was actuated,

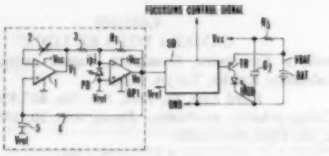
(d) said control circuit being arranged to operate such that when said EE lock select means is operated, the exposure control is performed regardless of the output of said light measuring circuit in the first mode but on the basis of the memorized signal in said memory means corresponding to that output of said light measuring circuit which was produced in the second mode as said EE lock select means was operated, and when said EE lock select means is not operated, the exposure control is performed regardless of the output of said light measuring circuit in the second mode but on the basis of the memorized signal in said memory means corresponding to that output of said light measuring circuit which was produced in the first mode.

4,455,070

COMPENSATING CIRCUIT FOR AN INFRARED-RAY SIGNAL DETECTION DEVICE IN AN AUTO FOCUS CAMERA

Masahiko Ogawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 6, 1982, Ser. No. 337,457
Claims priority, application Japan, Jan. 16, 1981, 56-5635
Int. Cl.³ G03B 7/08
U.S. Cl. 354—403 11 Claims



1. A signal detecting device for detecting the signal from a signal source oscillating with a certain determined frequency, comprising:

a detecting circuit;

a driving power source for said detecting circuit; and

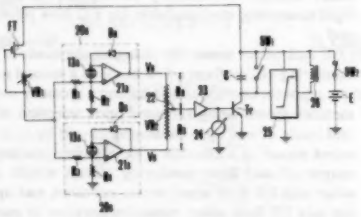
a signal producing circuit for producing a quasi-signal equivalent to a fluctuation signal from the detecting circuit depending upon the fluctuation of the driving power source for the detecting circuit, said fluctuation signal from the detecting circuit being compensated with the quasi-signal from the signal producing circuit.

4,455,071

LIGHT MEASURING INSTRUMENT FOR A SINGLE LENS REFLEX CAMERA

Masatake Kato, Tokyo, and Tokuichi Tsunekawa, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 15, 1982, Ser. No. 339,701
Claims priority, application Japan, Jan. 22, 1981, 56-7135
Int. Cl.³ G03B 7/08
U.S. Cl. 354—431 1 Claim



1. A light measuring instrument for a single lens reflex camera, comprising:

imaging optics for forming the object image on an image plane;

a plurality of light sensing means at least having a first light sensing means for sensing the light from a first part of the object image and a second light sensing means for sensing the light from a second part overlapping and larger than the first part of the object image;

a light measuring circuit supplied with outputs of the light sensing means;

means for selectively inputting the output from the first and the second light sensing means to the light measuring circuit; and

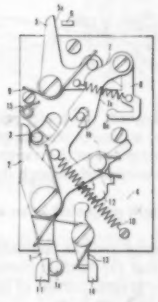
means for changing the ratio of the output of the first light sensing means to that of the second light sensing means.

4,455,072

SINGLE LENS REFLEX CAMERA

Masahisa Fujino; Akio Sunouchi, both of Tokyo; Tatsuo Konno, and Ryuji Suzuki, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1982, Ser. No. 364,184
Claims priority, application Japan, Apr. 8, 1981, 56-53664
Int. Cl.³ G03B 19/12
U.S. Cl. 354—153 3 Claims



1. A single lens reflex camera comprising:

(a) a mirror movable between a first position where it reflects incident light coming through a lens of said camera to a finder and a second position for photographing;

(b) a mirror driving mechanism which is moved from an exposure completion state to a film winding completion state by a film winding operation, said mechanism including a mirror driving spring which is charged by movement of said mirror driving mechanism from said exposure completion state to said film winding completion state so as to move said mirror from said first position to said second position, said mirror driving mechanism being moved by the spring force of said mirror driving spring from said film winding completion state to said exposure completion state so as to move said mirror from said first position to said second position;

(c) a shutter hold release member movable from a first state to a second state by the charged force of a release spring to release a shutter holding state thereof by a shutter holding member at an exposure preventing position and to allow a front screen of a shutter to run, said release member being at said holding state when it is at said first state; and

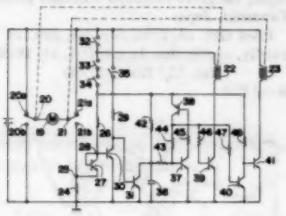
(d) a connection member operatively associated with said mirror driving mechanism and engageable with said release member, said connection member being engaged with said release member by movement of said mirror driving mechanism from said exposure completion state to said film winding completion state to move said release member to said first state in association with movement of said mirror driving mechanism while charging said release spring, said connection member releasing the holding action of said holding member by movement of said mirror driving mechanism from said film winding completion state to said exposure completion state and to move said release member from said first state to said second state by the charged force of said release spring.

4,455,073

CAMERA FILM DRIVE MOTOR CONTROL DEVICES

Shinji Tominaga, and Ikushi Nakamura, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 14, 1982, Ser. No. 368,352
Claims priority, application Japan, Apr. 29, 1981, 56-65051
Int. Cl.³ G03B 1/12
U.S. Cl. 354—173.11 7 Claims



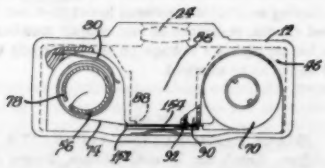
1. A camera film drive motor control device comprising:
a film drive motor for film wind-up and/or film rewinding, the motor current varying with the variation in the load of said motor;
a resistor connected in series with said motor so that a voltage commensurate with the motor current appears at a node between said motor and said resistor;
a level shift circuit connected to said node for shifting the voltage level at said node by a given constant level to generate a voltage signal for switching operation of a transistor;
a voltage detecting circuit which detects the level of said voltage signal to generate a signal to stop electric power supply to said motor when the voltage signal represents a given relationship with respect to a given reference voltage level as a result of the variation in the motor current.

4,455,074

AUTOMATIC FILM REWINDING CAMERA

Wan C. Wong, North Point, Hong Kong, and Shigeru Oshima, Tokyo, Japan, assignors to W. Haking Enterprises Limited, Hong Kong

Filed Mar. 22, 1983, Ser. No. 477,770
Int. Cl.³ G03B 1/12
U.S. Cl. 354—173.1 10 Claims



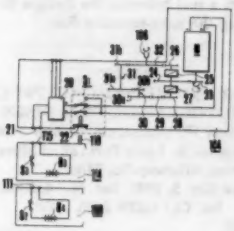
1. A still camera including a housing having a film chamber for receiving a film cassette with a film leader extending therefrom, said chamber defining a film path including a supply cavity for receiving said cassette, said supply cavity being at one end of said film path, a takeup cavity housing a takeup spool at the other end of said film path, an imaging area adjacent one side of said film path, an object lens, a shutter mechanism directing light from said object lens to said imaging area when operated, a door closing off said film chamber, means for prewinding the film in said film cassette onto said takeup spool after said cassette is inserted into said supply cavity and said film chamber door is closed, means for unwinding one frame length of said film from said takeup spool after each picture taking operation to position successive unexposed segments of said film at said imaging area, and means for rewinding the exposed segments of said film into said cassette, a film transport motor, and means responsive to an end-of-film condition, for automatically rewinding at least the last exposed portion of said film ahead of said leader into said cassette by actuating said motor and for alerting the user that such an end-of-film condition has occurred.

4,455,075

ELECTRIC MOTOR DRIVE DEVICE CAMERA

Tomonori Iwashita; Yoshitaka Watanabe, both of Tokyo, and Hidehiko Fukahori, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 23, 1982, Ser. No. 391,400
Claims priority, application Japan, Jul. 3, 1981, 56-99404[U]; Jul. 10, 1981, 56-102480[U]
Int. Cl.³ G03B 1/12
U.S. Cl. 354—173.1 4 Claims



1. An electric motor drive device for a camera with an attachable battery pack, comprising:
(a) a motor;
(b) first and second gear trains for transmitting the driving force of the motor, the gear ratio of said first gear train being set at a value at which the rotation torque of the motor is brought closer to a maximum efficiency point than the gear ratio of said second gear train, while the gear ratio of said second gear train is set at a value at which the rotation torque of the motor is brought closer to a maximum output point than the gear ratio of said first gear train;
(c) connecting means, said means connecting the auxiliary batteries provided in the battery pack parallel to the batteries provided in the electric motor drive device when the battery pack is mounted on the electric motor drive device; and
(d) change-over means for selecting one of the first and second gear trains, said change-over means being changed over according to the mounting of the battery pack on the electric motor drive device so as to select the second gear train.

4,455,076

FILM SUPPLY CASSETTE FOR CAMERA PROCESSOR

Stephen P. Birkeland, White Bear Lake, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Sep. 13, 1982, Ser. No. 417,058
Int. Cl.³ G03B 17/26
U.S. Cl. 354—275 5 Claims

1. A film supply cassette comprising a support spool formed of opaque material and comprising a hub, a pair of end flanges, and hub sections for rotatably supporting the hub,
a trailer secured to the hub and wrapped about the hub,
a length of light sensitive film having one end connected to the trailer and convolutely wound upon itself, and
a leader, formed of a laminate having a thickness of about 0.12 mm comprising a length of metal vapor-coated poly-

ethylene film and a thin film of polyester, secured to the free end of the light-sensitive film and convolutely wound about the light-sensitive film between two and three times, said laminate having a width of 4 to 6 mm greater than the

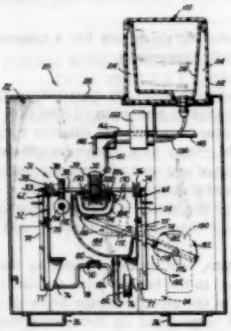
width of the light-sensitive film and greater than that of the spacing between the inner opposed surfaces of the end flanges and sufficiently thin to engage said opposed surfaces to form a seal between the flanges to restrict light from reaching the light-sensitive film.

4,455,077

PROCESSOR AND METHOD FOR PROCESSING PHOTOGRAPHIC FILM DISCS

Raisa Shpits; Robert W. Lundstrom, both of Minneapolis, and Benjamin H. Sannel, St. Louis Park, all of Minn., assignors to Pako Corporation, Minneapolis, Minn.

Filed Oct. 5, 1982, Ser. No. 432,860
Int. Cl.³ G03B *3/06, 3/08*
U.S. Cl. 354—299 **26 Claims**



1. A processor for processing undeveloped photographic film discs mounted on a spindle assembly, the processor comprising:

conveyor means for conveying the spindle assembly intermittently along a generally horizontal conveyor path to each of a plurality of processing stations, the conveyor means conveying the spindle assembly so that the spindle assembly has an axial direction which is generally horizontal and perpendicular to the conveyor path;

processing tanks for containing processing fluid positioned at selected processing stations;

fluid dispensing means for dispensing processing fluids into selected processing tanks; and

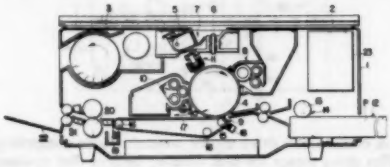
tank drive means for moving the processing tanks generally upwardly to a process position to place a portion of the film discs mounted on the spindle assembly within one of the processing tanks when the spindle assembly is positioned at that processing tank's processing station, and generally downwardly out of the conveyor path to a dump and transport position to dump any contents of the processing tanks and permit the conveyor means to advance the spindle assembly along the conveyor path to a next processing station.

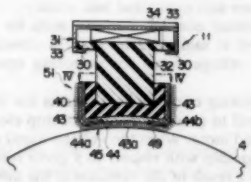
4,455,078

CHARGING DEVICE HAVING A CONDUCTIVE PARTICLE IMPREGNATED STRAND LINED CONTACT MEMBER

Hideo Mukai, Yokohama, and Toshimasa Takano, Sagamihara, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 13, 1981, Ser. No. 310,721
Claims priority, application Japan, Oct. 14, 1980, 55-143305
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 CH **10 Claims**





1. A charging device comprising:

a contact member formed of pliable material and having a predetermined electric resistance for contacting an object to be charged, said contact member having a multitude of raised strands formed of artificial fibers with conductive particles dispersed therein, the electric resistance of said multitude of strands gradually becoming lower along said contact member by stages in a direction of movement of said object to be charged;

an electrode electrically connected to said contact member and having an electric resistance lower than said predetermined electric resistance of said contact member; and

means for supplying a voltage on said electrode to charge said object to be charged.

4,455,079

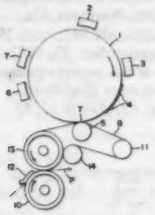
IMAGE REPRODUCING APPARATUS

Tadashi Miwa, Kunitachi; Kiyoshi Kimura, Iruma; Yukiharu Komiya, and Noriyoshi Tarumi, both of Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1982, Ser. No. 441,795
Claims priority, application Japan, Nov. 16, 1981, 56-183456; Nov. 16, 1981, 56-183457
Int. Cl.³ G03G *15/16, 15/20*
U.S. Cl. 355—3 TR **32 Claims**

1. In an image reproducing apparatus of the type in which a toner image formed on a charge receptor is transferred to a transfer member and is fixed on said transfer member by the application of pressure and heat by use of an intermediate transfer belt, the improvement wherein an auxiliary pressure contact roller is disposed downstream of a transfer-fixing portion so as to come into contact, via said intermediate transfer belt, with a support roller forming said transfer-fixing portion,

disposed inside said intermediate transfer belt and opposing a pressure contact roller via said intermediate transfer belt, so



that the contact area between said support roller and said intermediate transfer belt is enlarged.

4,455,080

COPYING APPARATUS EQUIPPED WITH CONTROL DEVICE

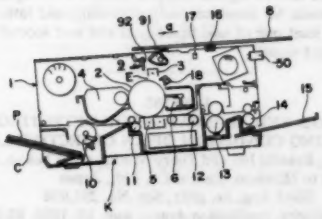
Masamichi Sugiura, Toyokawa; Tsuneo Kitagawa, Toyohashi, and Keiji Yoshida, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 27, 1981, Ser. No. 315,649

Claims priority, application Japan, Nov. 4, 1980, 55-155605; May 14, 1981, 56-73034; Oct. 13, 1981, 56-163766

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 SH **8 Claims**



1. A copying apparatus including means for generating a start signal for starting a copying operation, a movable member which is caused to start moving in response to the starting of the copying operation, a paper feeding means for starting feeding of copy paper sheets, a switch means actuated by said movable member during the movement of said movable member, said paper feeding means being actuated in response to actuation of said switch means, and a control device for controlling the copying operation,

said control device comprising:

means for generating a stop signal for stopping the copying operation;

means for preventing starting of operation of at least said paper feeding means when said stop signal is generated after said start signal has been generated and before said paper feeding means is operated; and

means for causing said movable means to be returned to a starting position when the starting of the operation of said paper feeding means has been prevented in response to the generation of said stop signal.

4,455,081

RECORDING DEVICE FOR RECORDING THE IMAGE OF AN ORIGINAL

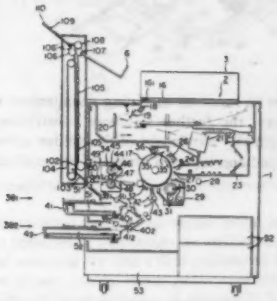
Shigeru Yoshimura, Yokohama, and Katsuichi Shimizu, Hoya, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 97,862, Nov. 27, 1979, abandoned, which is a division of Ser. No. 911,141, May 31, 1978. This application Jun. 17, 1982, Ser. No. 389,557

Claims priority, application Japan, Jun. 3, 1977, 52-65416; Jun. 14, 1977, 52-70074; Jun. 27, 1977, 52-76391

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 SH **9 Claims**



9. A recording device comprising:

(a) means for mounting thereon an original carrying image information to be recorded;

(b) first size detection means for detecting a size of said original;

(c) a plurality of storing means, each of which stores therein sheet recording mediums;

(d) image recording means for reading the image information on the original placed on said original mounting means by scanning the original and for recording the image information as a visible image onto a sheet recording medium drawn from a selected storing means;

(e) second size detection means for detecting a size of the sheet recording mediums stored in each of said storing means, and to provide an output corresponding to the size as detected; and

(f) means for inhibiting the recording operation of said image recording means when none of said storing means stores a sheet recording medium having a size which is available for recording in accordance with the size of the original detected by said first size detection means.

4,455,082

CROPPING KIT

Enn Lepist, Golden Apartments, East Park Rd., Hyde Park, N.Y. 12538

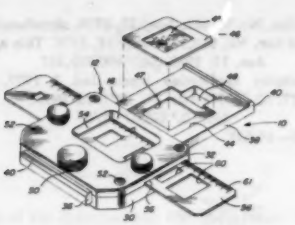
Filed Sep. 2, 1982, Ser. No. 415,221

Int. Cl.³ G03B *27/62*

U.S. Cl. 355—75 **12 Claims**

1. Apparatus for cropping the image area of a photographic transparency comprising a structure having means forming a generally rectangularly-shaped viewing aperture forming a passway extending from top to bottom through the structure, a set of opposite sides of the structure having a first slideway extending therethrough and communicating with the rectangularly-shaped aperture, a further set of opposite sides of the structure having a further slideway extending therethrough and communicating with the rectangularly-shaped aperture, an elongated masking member with a plurality of various sized openings spaced throughout its length and adapted to be received in sliding engagement within the first slideway, the first

slideway constraining the masking member for lengthwise movement of the masking member across the rectangularly-shaped aperture in one direction, and an elongated transparency holder having at least one transparency holding aperture



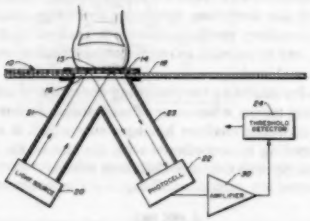
and adapted to be received in sliding engagement within the further slideway, the further slideway constraining the the holder for lengthwise movement of the holder across the rectangularly-shaped aperture in a direction perpendicular to said one direction.

4,455,083

METHOD AND APPAPARATUS FOR FINGERPRINT VERIFICATION OF IDENTITY

Paul B. Elmes, P.O. Box 24-C-29, Los Angeles, Calif. 90024

Filed Aug. 24, 1981, Ser. No. 295,647
Int. Cl.³ G06K *9/74*
U.S. Cl. 356—71 **6 Claims**



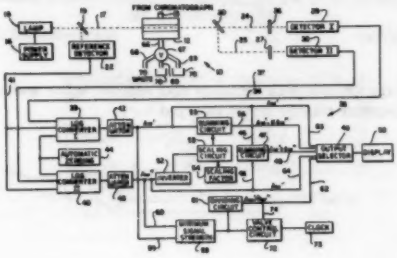
1. A method for verifying the fingerprint of the bearer of a card by comparing the fingerprint of the bearer with the fingerprint of the person to whom the card is issued comprising the steps of imprinting with reflective material a negative of the fingerprint of the person to thom the card is issued in a transparent region of the card, placing the card on a surface with the transparent region over a window, directing a beam of light at the transparent region through said window for reflection of light to a cicuit for detecting the level of reflected light, and placing the finger of the bearer of the card over the imprinted negative fingerprint with proper registration for matching the fingerprint of the bearer with the imprinted negative fingerprint, and verifying a match by observing a predetermined minimum level of reflection of light from the imprinted negative fingerprint and the fingerprint of the bearer.

4,455,084

CHROMATOGRAPH DETECTION SYSTEM

Paul A. Webb, Jr., Lawrenceville; Alan H. Small, Atlanta, and Dean M. Ball, Norcross, all of Ga., assignors to Micromeritics Instrument Corporation, Norcross, Ga.

Continuation of Ser. No. 180,867, Aug. 25, 1980, Pat. No. 4,367,041. This application Sep. 27, 1982, Ser. No. 423,567
The portion of the term of this patent subsequent to Jan. 4, 2000, has been disclaimed.
Int. Cl.³ G01N *21/85*
U.S. Cl. 356—72 **9 Claims**



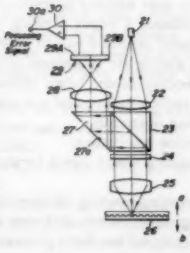
1. In a liquid chromotograph, a detection system comprising:
a flow cell for receiving a continuous flow of eluent including a plurality of components separated according to retention time by said chromatograph;
means for passing two wavelengths of light through said flow cell;
means for detecting the intensities of said wavelengths and for converting said detected wavelengths into a first electrical signal proportional to the absorbance of one of said wavelengths, and a second electrical signal proportional to the absorbance of the other of said wavelengths;
ratio means for continuously determining the ratio of said first and second signals and providing a ratio signal; and
output means for simultaneously providing said ratio signal and at least one of said first signal and said second signal as output signals.

4,455,085

METHOD AND APPARATUS FOR DETECTING A FOCUSSING CONDITION OF AN OBJECTIVE LENS

Kiichi Kato; Kenichi Ito, and Tohru Musha, all of Tokyo, Japan, assignors to Olympus Optical Co. Ltd., Japan

Filed Aug. 14, 1981, Ser. No. 292,930
Claims priority, application Japan, Aug. 19, 1980, 55-114462
Int. Cl.³ G01J *1/36*
U.S. Cl. 356—122 **36 Claims**



1. A method for detecting a focussing error signal of an objective lens with respect to an object onto which a light spot is to be formed by means of said objective lens, comprising:

focussing light emitted from a light source onto the object;

introducing at least a part of a light flux reflected from the object into an optical member including an optical surface which reflects and/or refracts said part of light flux, said optical member being made of material which has a higher refractive index than that of material into which said light flux enters after being refracted by and transmitted through said optical surface;

guiding at least a part of the light flux reflected and/or refracted by said optical surface to a relay lens and then introducing the light flux transmitted through the relay lens onto a light detector;

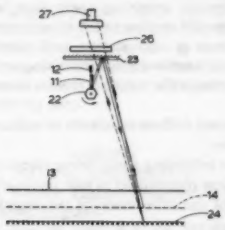
detecting by the light detector a variation in distribution of light amount of at least a part of light flux reflected and/or refracted by said optical surface to produce the focussing error signal; whereby the relay lens is arranged between the objective lens and the light detector, in a manner preventing the light incident on the light detector from inverting, even if the objective lens substantively deviates from its focused condition.

4,455,086

OPTICAL TEST APPARATUS FOR EXAMINING AN OBJECT

Robert N. West, Chislehurst, and Andrew J. Barker, Orpington, both of England, assignors to Sira Institute Limited, England

Filed Feb. 9, 1982, Ser. No. 347,132
Int. Cl.³ G01N *21/00*
U.S. Cl. 356—237 **25 Claims**



12. A method of examining a transparent object comprising:

(a) scanning two beams of radiation across the object and across respective grating means so that each beam is is passed through the object before passing to its respective grating means,

(b) each grating means comprising first and second alternately arranged areas which influence the radiation in different ways, successive areas being of substantially the same width in the direction of scan,

(c) the beams being displaced relative to one another and/or the grating means being displaced relative to one another by a total distance in the direction of scan equal to an odd number of widths so that, at all times during the scan, in the absence of faults in said object, one of the beams is being influenced by an area of the first type and the other of the beams is being influenced by an area of the second type and

(d) collecting and the radiation influenced by both the grating means and the object.

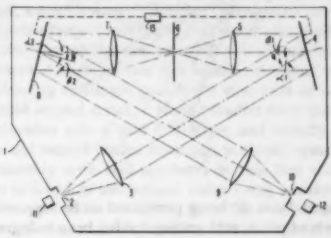
441-176 OG - 84 - 10

4,455,087

MONOCHROMATIC IMAGING APPARATUS

Charly D. Allemand, Newtownville, and David L. Brewer, Stow, both of Mass., assignors to Hamamatsu Systems Inc., Waltham, Mass.

Filed Apr. 6, 1981, Ser. No. 251,143
Int. Cl.³ G01J *3/18*
U.S. Cl. 356—333 **7 Claims**



1. An apparatus for producing monochromatic images comprising:

a. an entrance slit whereat an object image is focused,

b. a first collimating lens means for collimating light imaged at said entrance slit into a first collimated beam,

c. a first planar grating means positioned along the path of said first collimated beam and physically behind said first collimated lens means so that said first collimated beam will impinge thereon and be diffracted thereby,

d. a first focusing lens means positioned physically in front of said first planar grating means for focusing diffracted light from said first planar grating means onto a first plane,

e. an intermediate slit located at said first plane to prevent unwanted light from being projected further,

f. a second collimating lens means disposed to collimate light diffracted from said first planar grating means and focused by said first focusing lens means on said intermediate slit at said first plane,

g. a second planar grating means disposed along the path of the collimated light from said second collimating lens means and facing said first planar grating means so that said light from said second collimating lens means will impinge thereon and be diffracted by said second planar grating means, said diffracted light from said second planar grating means travelling along a path which crosses over said first collimated beam,

h. a second focusing lens for focusing the diffracted light from said second planar grating means onto a second plane,

i. an exit slit at said second plane where said light from said second focusing lens means is brought to focus, and

j. means coupled to said first and second planar grating means for concurrently moving said first and second planar grating means whereby the angle of incidence of the light projected onto said first planar grating means is equal to the angle of diffraction from the said second planar grating means, and whereby said object image appearing at said entrance slit appears accurately and proportionally reproduced at said exit slit and of a selected wavelength or band of wavelength of the total spectrum of wavelengths of said object image.

4,455,088

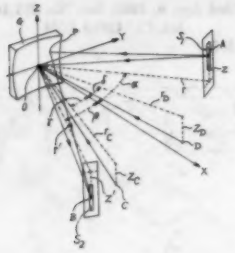
MONOCHROMATOR WITH CONCAVE GRATING

Masato Koike, Kyoto, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Feb. 10, 1982, Ser. No. 347,417
Int. Cl.³ G01J *3/20*
U.S. Cl. 356—334 **11 Claims**

1. A monochromator comprising a concave grating having a

Rowland plane defined by the geometry of said grating, means for defining an entrance slit and means for defining an exit slit, said entrance slit being positioned on one side of the Rowland



plane and said exit slit being positioned on the opposite side of said Rowland plane, said grating having been holographically formed by using two coherent light sources for holographic recording positioned on the same side of said Rowland plane.

4,455,089

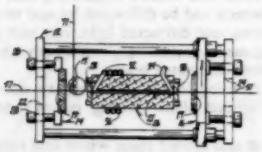
REFRACTIVE INDEX AND ABSORPTION DETECTOR FOR LIQUID CHROMATOGRAPHY BASED ON FABRY-PEROT INTERFEROMETRY

Edward S. Yeung, and Steven D. Woodruff, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation-in-part of Ser. No. 411,472, Aug. 25, 1982, abandoned. This application Jan. 24, 1983, Ser. No. 460,467

Int. Cl.³ G01B 9/02

U.S. Cl. 356—352 **23 Claims**



1. A refractive index and absorption detector for liquid chromatography utilizing a Fabry-Perot interferometer and a chromatographic flow cell comprising:

(a) a Fabry-Perot interferometer having a framework to which are attached first and second adjustable mirrors perpendicularly to and in alignment with a beam path passing through said framework, said second mirror being movable along said beam path;

(b) a chromatographic flow cell positioned in operative alignment between said first and second mirrors and having at least one bore extending therethrough, each said bore having a separate inlet and outlet for introduction of liquids into said bore, and windows sealingly placed over opposite ends of each said bore to contain said liquids, and to allow a light beam from a light source to enter and exit each said bore; and

(c) means to detect the interference fringes produced by said interferometer.

4,455,090

APPARATUS FOR MEASURING SURFACE REFLECTANCE CHARACTERISTICS

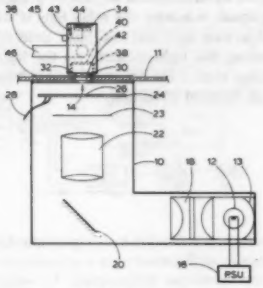
Brian S. Roberts, Gerrards Cross, England, assignor to The Wiggins Teape Group Limited, Great Britain

Filed Jul. 17, 1980, Ser. No. 169,670

Claims priority, application United Kingdom, Jul. 26, 1979, 7926129

Int. Cl.³ G01N 21/01

U.S. Cl. 356—448 **18 Claims**



1. Apparatus for measuring the opacity of a sample area comprising:

an enclosure having a radiation transmissive window defining a station for receiving a sample to be measured;

means within said enclosure for directing radiation through the window at said station and photo-electric means within said enclosure for receiving such radiation reflected through the window from a sample placed at said station;

first and second defined standards of reflectance locatable in said station;

said window exhibiting a non-linear effect on the intensity of the radiation transmitted to said photo-electric means as a function of the reflectance of the sample located at said station;

a circuit arrangement connected to said photo-electric means to process electrical signals obtained therefrom in response to the location of said standards and a sample to be measured at said station, said circuit arrangement including a microprocessor system and being operable to digitize said electrical signals for use by the microprocessor system, and wherein

said microprocessor system includes means storing program routines for enabling the microprocessor system to compute, from a digitized signal obtained from a sample, a value representing the apparent reflectance of said sample with reference to the digitized signals obtained from said standards, such apparent reflectance values having a non-linear relationship to the true reflectance values of samples over a measured range of reflectance;

means storing information defining said non-linear relationship; and

said stored program routines controlling the microprocessor system to derive the true reflectance of a sample from the computed apparent reflectance value with the aid of the stored non-linear relationship information.

4,455,091

PROCESS FOR REGULATING THE MIXING PROCESS OF RUBBER MIXTURES IN AN INTERNAL MIXER

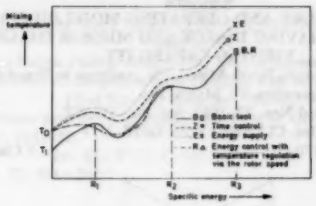
Wolfgang Bamberger, Gerlingen, and Werner Wiedmann, Stuttgart, both of Fed. Rep. of Germany, assignors to Werner & Pfleiderer, Stuttgart, Fed. Rep. of Germany

Filed Aug. 28, 1981, Ser. No. 297,365

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1980, 3035353

Int. Cl.³ B01F 7/08; B29B 1/10

U.S. Cl. 366—76 4 Claims



1. A method for controlling the mixing of rubber mixtures in a closed mixer, said mixer including feed and mixing blades disposed in a mixing chamber and means to drive said blades in opposite directions and at variable speeds, said mixer further including pressure-actuated plunger means and means for regulating the temperature of the mixing in the mixing chamber, comprising the steps of:

using a curve of desired values correlating mixing temperature to the specific energy supplied to the mixture in said mixer;

integrating the energy provided to said motor over the total process time to determine the specific energy supplied to the mixture in said mixer;

measuring the actual value of the temperature of the mixture in said mixer;

comparing the measured temperature and the energy supplied during the mixing process time with the point on said curve of desired values corresponding thereto; and

controlling at least one of the speed of rotation of said blades and the pressure of said pressure-actuated plunger based on said comparing step.

4,455,092

MIXING APPARATUS

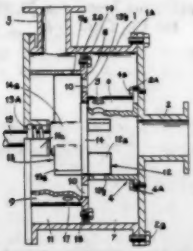
Stanley A. Platts, Warley, England, assignor to Unishear Mixers Limited, Tipton, England

Filed Jun. 24, 1982, Ser. No. 391,926

Claims priority, application United Kingdom, Jul. 2, 1981, 8120541

Int. Cl.³ B01F 7/04

U.S. Cl. 366—305 9 Claims



1. A mixing apparatus comprising a hollow housing, a first plate stator mounted within said housing dividing the interior thereof into a first chamber and a second chamber, a material inlet through said housing communicating with said first chamber, a material outlet through said housing communicating with said second chamber, apertures through said first stator through which said chambers communicate, a second hollow cylindrically shaped stator mounted within said first chamber so that the cylindrical wall thereof is between said inlet and said apertures in said first stator, apertures through said cylindrical wall, a rotor rotatively mounted within said housing and extending rotatively through said first stator comprising a first bladed rotor part on the first chamber side of said first stator, axially directed edges on said first bladed rotor part in closely spaced shearing relationship with the inlet ends of said apertures in said second stator, a second bladed rotor part on the second chamber side of said first stator, and radially directed edges on said second bladed rotor part in closely spaced shearing relationship with said apertures in said first stator, said apertures in said first and second stator being positioned with respect to each other to direct fluid flow therethrough in different directions, so that rotation of said rotor forces material introduced through said inlet successively through said first and second stators and by cooperation of said edges and apertures, subjects said material to shearing actions in different non-parallel planes.

4,455,093

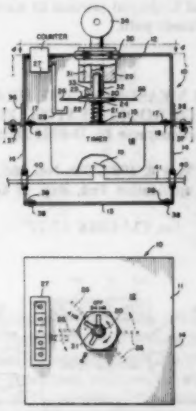
TIMER MECHANISM FOR RENTAL EQUIPMENT

Brenda R. Bowen, Rt. 3, Box 516, West Plains, Mo. 65775, and Gaylon D. Griffin, 1933 Lynn St., West Plains, Mo. 65775

Filed Aug. 25, 1982, Ser. No. 411,507

Int. Cl.³ G04B 47/00

U.S. Cl. 368—10 5 Claims



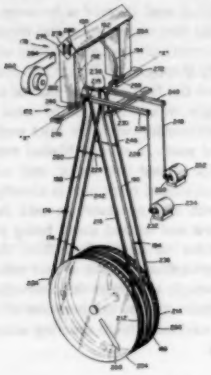
1. A timer mechanism for rental equipment comprising a housing for said timer mechanism, a support plate mounted in said housing, a spring operated timer mechanism mounted on said support plate, a shaft extending from said timer mechanism, a rotor mounted for rotation on said shaft, a plurality of arms mounted for rotation with said rotor, an indicator mounted in said housing, a counter arm mounted on said indicator, a partially hollow key adapted to extend over said shaft, said rotor traveling downwardly along said shaft upon application of a downward force on said key, said arms on said rotor engaging said counter arm on said indicator when said rotor is in a depressed position and upon rotation of said key, said indicator will indicate the time interval for which the equipment has been rented.

4,455,094

MOTION APPARATUS

Robert G. Russell, 2083 Welsh Hills Rd., NE., Granville, Ohio 43203

Filed Jan. 13, 1982, Ser. No. 339,170
Int. Cl.³ G01R 27/22; G04B 1/26
U.S. Cl. 368—65 33 Claims



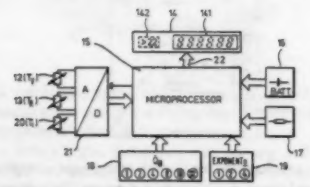
1. Apparatus for moving an object in an arcuate path, said apparatus comprising an object, an elongate tube having a generally U-shaped portion, said U-shaped portion being engagable with and supporting said object, means for supporting said elongate tube for pivotal movement in an arcuate path, and means for supplying fluid in pulses to said elongate tube on one side of said U-shaped portion with the fluid moving toward said U-shaped portion when entering said tube to cause said object and said U-shaped portion to move together back and forth in the arcuate path.

4,455,095

SYSTEM FOR MEASURING THE HEAT ENERGY EMISSION OF ROOM HEATING ELEMENTS

Werner Bleiker, Hafenstrasse 16, D-4354 Datteln, Fed. Rep. of Germany

Filed May 6, 1981, Ser. No. 260,966
Claims priority, application Fed. Rep. of Germany, May 8, 1980, 2857217
Int. Cl.³ G01K 17/10
U.S. Cl. 374—39 12 Claims



1. A system for defining the heat emission of at least one heating element which is provided with a supply for the heating medium and a return for the heating medium, the system comprising:

(a) a plurality of temperature measuring sensors including a first sensor for measuring the supply temperature T_v, a second sensor for measuring the return temperature T_R, and a third sensor for measuring the room or ambient temperature T_i which is influenced by the heat emission of the heating element;

(b) input devices for a selective input of multiplier constants representing said heating element capacity Q_N and an exponent n which represents the change in heating element capacity;

(c) a timer for producing a time cycle; and

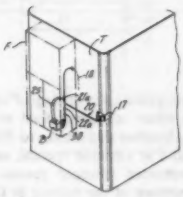
(d) a computer coupled to said temperature measuring sensors, the input devices and said timer, and which combines the measured temperature values and the two heating element constants and integrates the time derived from the timer so that the output of the computer provides a quantitive measure for the heat emission of the heating element.

4,455,096

TEMPERATURE AND OPERATING MODE DIGITAL DISPLAY HAVING DIRECT AND MIRROR IMAGE VIEWING CAPABILITY

Bjorn S. Brandstedt, North Miami, Fla., assignor to Brandstedt Controls Corporation, Ft. Myers, Fla.

Filed Nov. 10, 1981, Ser. No. 319,978
Int. Cl.³ B60Q 1/26; G01K 1/14
U.S. Cl. 374—170 9 Claims



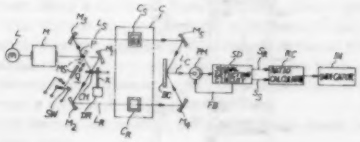
1. A temperature monitoring and remote display unit for trailer trucks having a cab equipped with a rear view mirror, the trailer having a refrigerated compartment and refrigeration equipment therefor, said unit comprising a weather-proof casing having a transparent window, a plurality of seven-segment digitals for displaying temperature values mounted within said casing in a visible position behind said window, bracket means for attaching the casing to a front exterior wall of said trailer positioned for viewing said digitals in the rear view mirror by the driver in the cab and from the ground when the trailer is parked, electronic means including a sensor mounted within said refrigerated compartment for monitoring the temperature within said compartment and displaying the results on said digitals in either a real image for said ground viewing or a reverse image for said mirror viewing, and a manual switch included in the electronic means for selecting the real or reverse image display.

4,455,097

SPECTROPHOTOMETER

Tetsuo Ichikawa, Kusatsu; Osamu Akiyama, Kyoto; Rikuo Hira, Kyoto, and Takashi Nishimura, Kyoto, all of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Mar. 29, 1982, Ser. No. 362,887
Claims priority, application Japan, Jun. 29, 1981, 56-97543[U]
Int. Cl.³ G01J 3/42
U.S. Cl. 356—323 9 Claims



1. A spectrophotometer comprising: means for producing a beam of monochromatic light; beam splitting means for causing said monochromatic light beam to alternately advance

along a first and a second optical path; cell means disposed in each of said first and second optical paths; photoelectric means for receiving the light from each of said cell means to produce a corresponding electrical signal; and optical reflecting means movable for selective positioning in and out of said monochromatic light beam between said means for producing a beam of monochromatic light and said beam splitting means so that when said movable optical reflecting means is positioned in said monochromatic light beam, it causes said light beam to advance along only one of said first and second optical paths.

4,455,098

SELF-PUMPING THRUST BEARING FOR ELECTRIC MACHINES

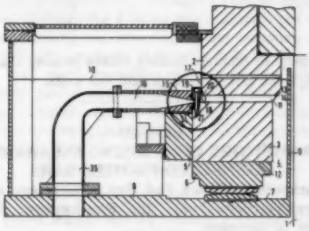
Hans-Jurgen Pollok, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 429,864

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1981, 3141059

Int. Cl.³ F16C *17/04, 33/10*; F16N *7/28*

U.S. Cl. 384—307 **4 Claims**



1. A self-pumping thrust bearing for electric machines having a vertical shaft comprising a rotating thrust ring, a thrust ring cup in which the thrust ring is disposed, an oil space between the thrust ring and the vertical shaft disposed above the bearing gap, approximately radially-extending bores in the rotating thrust ring, a ring canal arranged in a stationary part disposed adjacent to the thrust ring, the radial bores being operative upon rotation of the thrust ring to suck oil from the oil space and feed it to the ring canal from which it is fed to at least one cooler and returned to the thrust bearing cup, sealing means disposed in the gap between the outer surface of the thrust ring and the stationary part, a circular canal disposed adjacent to the outer surface of the thrust ring into which the radial bores open, a ring disposed adjacent the thrust ring bounding the circular canal on its side facing the stationary part with a gap therebetween, and means for adjusting the position of the ring relative to the thrust ring.

4,455,099

BEARING LUBRICATING SYSTEM FOR ELECTRIC ROTARY MACHINE

Kazunori Shibasaki, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

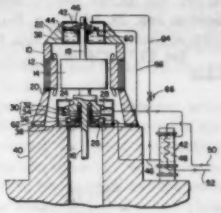
Filed Oct. 19, 1982, Ser. No. 435,392

Claims priority, application Japan, Oct. 20, 1981, 56-169055

Int. Cl.³ F16C *33/10*

U.S. Cl. 384—316 **5 Claims**

1. A bearing lubricating system for a vertical shaft electric rotary machine comprising a rotor, a pair of upper and lower shafts extending in vertically aligned relationship and in the opposite directions from said rotor, upper bearing means for rotatably supporting said upper shaft, lower bearing means for rotatably supporting said lower shaft, an upper oil tank charged with an amount of a lubricating oil and accommodating said upper bearing means therein, a lower oil tank charged with an amount of the lubricating oil and accommodating said lower bearing means therein, centrifugal pump means disposed in said lower oil tank to pump said lubricating oil externally of said lower oil tank, an external oil cooler receiving said lubricating oil externally pumped by said centrifugal pump means to cool said received lubricating oil, first oil piping means for



returning said lubricating oil in said oil cooler back to said lower oil tank, and second oil piping means for supplying said lubricating oil in said oil cooler to said upper oil tank and returning said lubricating oil within said upper oil tank to said lower oil tank.

4,455,100

POCKET-SIZED CHECK WRITING DEVICE WITH CHECK FORM

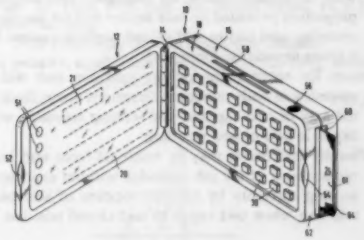
Sebastian Bauer, Kufsteiner Strasse 5, D-8201 Raubling/Obb., Fed. Rep. of Germany

Continuation-in-part of Ser. No. 101,170, Dec. 7, 1979, abandoned. This application Mar. 10, 1982, Ser. No. 356,819

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1978, 2852989

Int. Cl.³ B41J *3/21, 3/36, 3/46*

U.S. Cl. 400—88 **12 Claims**



1. In a pocket-sized cheque writing device having a means for positioning a cheque form in a writing position, a plurality of non-impact mosaic writing heads for reproducing alpha-numeric symbols positioned with respect to said writing position and a manually operable alpha-numeric keyboard for actuating each of said writing heads individually by means of a control unit, the improvement comprising:

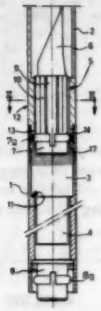
each of said plurality of writing heads being the size of a single character, being independently controllable and addressable, and being immovably disposed within said device to register with one of a plurality of predetermined cheque writing locations of said cheque form with a one to one relationship being established between each of said writing heads and each of said check writing locations; and

said control unit being mechanically arranged and electrically connected between said keyboard and said plurality of writing heads in order to successively provide an association of said keyboard with each one of said plurality of writing heads.

4,455,101
WRITING INSTRUMENT HAVING A NON-ROTATABLE CAP FOR BARREL REMOVAL

Jean G. Malamoud, Saint Jorioz, France, assignor to S.T. Dupont, Paris, France

Continuation of Ser. No. 73,154, Sep. 7, 1979, abandoned. This application Jun. 29, 1981, Ser. No. 278,530
Claims priority, application France, Sep. 11, 1978, 78 25994
Int. Cl.³ B43K 9/00, 5/00
U.S. Cl. 401—243 **8 Claims**



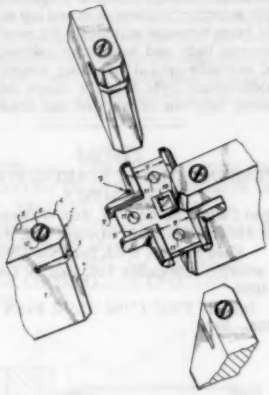
1. A writing instrument comprising:
a writing assembly;
a holder for a renewable ink cartridge joined to said writing assembly, said holder being provided with an elastic annular radial projection;
a barrel removably secured to said holder by rotation; a removable cap adapted in closed position to fit over and thereby cover and substantially seal said writing assembly from the ambient atmosphere, said cap being provided with an annular recess for engaging said annular radial projection provided on said holder and for thereby axially retaining said cap in said closed position against less than a given separation force; and
means for rotationally locking said cap and said writing assembly in both rotational directions about the longitudinal axes of said cap and said writing assembly when said cap is in said closed position;
whereby said barrel may be removed from said holder for replacement of the ink cartridge without exposure of said writing assembly by relative rotation of said barrel and said cap when said cap is in said closed position.

4,455,102
SYSTEM FOR ASSEMBLING AND FIXING PANELS

Stefan I. Baroï, 8, Avenue de Miremont, 1206 Geneva, Switzerland, and Bernard Duchenet, Thonon-les-Bains, France, assignors to Stefan Ionel Baroi, Geneva, Switzerland

Filed Sep. 21, 1981, Ser. No. 304,550
Claims priority, application France, Sep. 26, 1980, 8020981
Int. Cl.³ F16B 5/06
U.S. Cl. 403—173 **2 Claims**

1. Assembly system for panels, comprising a plurality of panels each having notches in two opposite edges, and linkage parts interconnecting at least two panels, each linking part having a flat wall having a thickness corresponding to the width of said notches, each linkage part having guiding members that rest against the faces of the panels when said flat walls are disposed in said notches, each linkage part having a central abutment that contacts the edge of the panels it links, the corners of the edges of the panels being chamfered to form resting faces, said resting faces of two adjacent panels at right angles to each other being in contact with each other, and holes through the edges of the panels and through said flat walls of said linkage parts, said holes through the panels being parallel to said edges of the panels having said chambers and

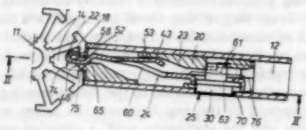


being adapted to receive locking means passing therethrough and through the holes through said flat walls.

4,455,103
FRAMEWORK COMPRISING SEPARABLY CONNECTED PROFILE BARS

Dieter Hackenberg, Witten, Fed. Rep. of Germany, assignor to Octanorm-Vertriebs-GmbH für Bauelemente, Filderstadt, Fed. Rep. of Germany

Filed Jul. 9, 1982, Ser. No. 396,723
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1981, 3128595
Int. Cl.³ F16B 7/04
U.S. Cl. 403—190 **9 Claims**



1. A framework of separably connected profile bars comprising:
at least one profile bar having several undercut longitudinal slots and another profile bar having a hollow section for face end acceptance of a coupling member;
the coupling member comprising two different kinds of coupling means for engaging the at least one profile bar and protruding from the face end of the other profile bar, which, in a coupling situation, can be inserted into a longitudinal slot and clamped therein, the coupling means includes
one pair of stationary coupling projections at an end of a bearing housing fitted in the hollow section, and
a movable coupling hook arranged between said two projections at the end of a holding member, said holding member being longitudinally movable in the bearing housing;
the bearing housing being provided with a wedge surface oriented inwardly and transversely of the housing spring means for pressing a matching inclined surface of the holding member against said wedge surface;
an eccentric pin passing through the holding member and being rotatably supported in the bearing housing, said pin extending transversely relative to the profile bar and

having an actuating end adapted to engage a cross hole of the profile bar receiving the coupling member;

said eccentric pin upon rotational movement moving said holding member in a longitudinal direction of the profile bar and thereby displacing the coupling hook at the end of the holding member transversely relative to the longitudinal direction by the cooperation of the matching inclined surface along the wedge surface in bearing housing against the spring means;

the holding member being a sheet metal strip provided with the spring means defined by a resilient tongue cut out of the sheet metal strip and bent, a free end of the tongue bearing against an inner wall of bearing housing;

the holding member being guided in a longitudinal direction and the tongue generating a spring force between the matching inclined surface of the holding member and the wedge surface of the bearing housing;

the wedge surface extending between the two coupling projections of the bearing housing and being engaged by an offset of the sheet metal strip defining the matching inclined surface of the holding member, said offset locating the eccentric pin in a rear wall cut-out of the bearing housing, said cutout serving as an access opening; and

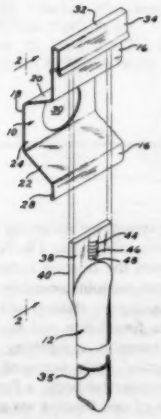
the resilient tongue acting through a control section of the holding member for forcing the eccentric pin out of the bearing housing and maintaining the actuating end of the pin resiliently engaged in a cross hole of the profile bar such that, upon installion of the bearing housing, the eccentric pin in bearing areas in the bearing housing is pressed in axially against the force of the resillient tongue until the actuating end extends out of the cross hole of the profile bar.

4,455,104

METAL CONCRETE JOINT FORM AND ADJUSTABLE STAKES

Albert P. Weisbach, Louisville, Ky., assignor to Cardinal Manufacturing Company, Louisville, Ky.

Filed Apr. 28, 1982, Ser. No. 372,495
Int. Cl.³ E01C *11/04*
U.S. Cl. 404—50 **4 Claims**



1. An interlocking metal concrete joint form and supporting stakes for use in pouring concrete slabs comprising:

a. a plurality of expendable metal stakes, each having a flattened top end with a plurality of closely-spaced vertically-arranged serrations formed on one side of the flattened end;

b. and an expendable, relatively rigid, elongated sheet metal form with a transverse, cross section having a vertically extending planar portion with an offset protruding key portion adjacent its midheight, and an inverted hook portion at the top edge of the form on the side that is opposite the said protruding key portion, said hook portion having a downturned flange that is spaced away from the said vertical planar portion, the lower edge of the said flange being hemmed on the inside, where this hemmed edge is folded outwardly at an upwardly-inclined angle to cause the rough, raw edge of the sheet metal hem to be on the inside of the flange and inclined in an upward direction to serve as a locking pawl;

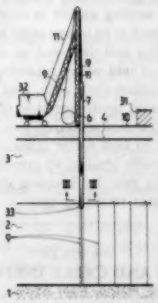
c. where the spacing between adjacent serrations is about equal to the thickness of the material of the locking pawl to create a ratchet and pawl interlocking relationship, whereby when the stakes are widely separated and supported upright in the ground, and the metal form is lowered onto the stakes and driven into place, the inclined raw edge of the hemmed edge of the flange will spring past certain of the serrations on each stake until the form is leveled throughout, thereby resulting in a strong locking action between the form and its supporting stakes, while the locking pawl is stressed in compression in the event a lifting force were applied to the form tending to lift the form from the stake.

4,455,105

PROCEDURE AND MEANS FOR CREATING A VERTICAL DRAIN

Mauno O. Juhola, Lounaisväylä 2, 00200 Helsinki 20, Finland

PCT No. PCT/FI81/00035, 371 Date Jan. 20, 1982, 102(e) Date Oct. 20, 1982, PCT Pub. No. WO81/03354, PCT Pub. Date Nov. 26, 1981
PCT Filed May 21, 1981, Ser. No. 346,053
Claims priority, application Finland, May 22, 1981, 801657
Int. Cl.³ E02B *11/00*
U.S. Cl. 405—50 **5 Claims**



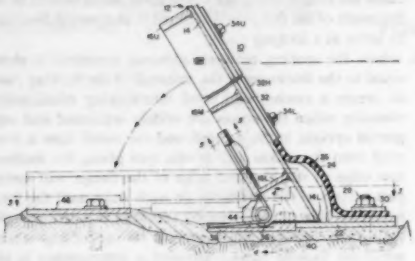
1. A method of creating a vertical drain in a first layer of soil located below a second layer of soil, comprising: pushing into the first layer an insertion tube carrying therewithin a prefabricated drain and cross-cutting means located within said tube adjacent its lower end, securing the lower end of the drain in the soil, raising the insertion tube to a height such that said cross-cutting means is in a location in said second layer, actuating said cross-cutting means at said location to cut-off the lower end of said drain, and pulling out said insertion tube from said second layer.

4,455,106

FLASH GATE BOARD

William M. Johnson, P.O. Box 877, 2310 Langhorne Rd., Lynchburg, Va. 24505

Filed Oct. 23, 1981, Ser. No. 314,374
Int. Cl.³ E02B 7/44
U.S. Cl. 405—94 **6 Claims**



1. A flood control apparatus for mounting at the top of a dam, said apparatus comprising at least one gate assembly including:

a water retaining gate having an upstream side, a downstream side, an elongated upper edge, an elongated lower edge, and two side edges;

a hinge secured to the dam top and to said downstream side of said water retaining gate at the lower edge thereof to allow said water retaining gate to pivot about a horizontal axis between a water holding position and a water releasing position, said hinge including a hinge pin;

a torsion spring bearing against said downstream side of said water retaining gate to bias said water retaining gate towards said water holding position, said hinge pin being coaxial with and extending through coils of said torsion spring;

whereby said water retaining gate automatically pivots in either direction between said water holding position and said water releasing position in response to pressure from water or debris in the water on said upstream side of said water retaining gate sufficient to overcome the opposing pressure of said torsion spring and tending to move said water retaining gate to said water releasing position; and;

a resilient water sealing gasket in elongated strip form, said gasket being fixed at its lower edge to the dam top and free at its upper edge and disposed so as to press against said upstream side of said water retaining gate forming a wide contact seal surface therewith, and to yield and maintain contact with said upstream side of said water retaining gate when said water retaining gate is displaced from said water holding to said water releasing position, said resilient gasket thereby tending to prevent the jamming of said water retaining gate by keeping debris from said lower end of said water retaining gate.

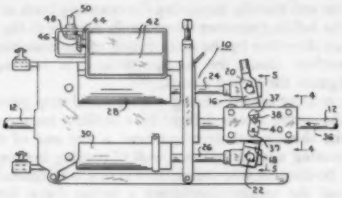
4,455,107

PIPE AND CABLE INSTALLERS

William O. Schosek, North Fort Myers, Fla., assignor to Elephant Industries, Inc., North Fort Myers, Fla.

Filed Jul. 2, 1982, Ser. No. 394,621
Int. Cl.³ E21B 9/00
U.S. Cl. 405—184 **6 Claims**

1. An underground pipe installing device comprising an installation rod adapted to be projected underground from an operating trench, a pair of diametrically opposed rod driving jaws pivotally mounted transversely of the installation rod and having central radial lengths from the pivotal mounting of the jaws to the position perpendicular to the rod proportioned to disengage the installation rod when the jaws are substantially perpendicular to the installation rod, the opposite sides of the driving jaws having longer radial lengths to engage the installation rod when the driving jaws are pivoted in opposite directions from the central perpendicular position relative to the



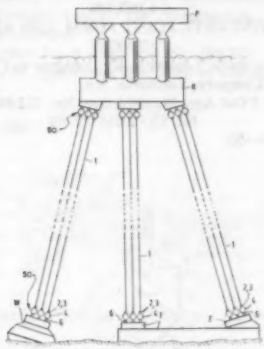
installation rod, a source of fluid pressure, and fluid pressure operated means to actuate the jaws to engage the installation rod and to exert an axially directed force through the jaws to move the installation rod.

4,455,108

ANCHORING SYSTEM FOR A SEA STATION SUPPORTED ON FLOATING BODIES

Helmut Lausberg, Oberhausen, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 3, 1982, Ser. No. 345,412
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1981, 3104570
Int. Cl.³ E02B 17/00
U.S. Cl. 405—202 **19 Claims**



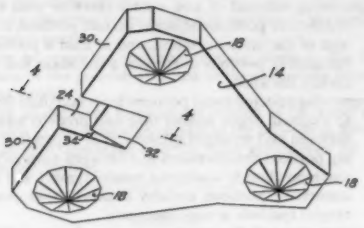
1. A sea anchoring system for anchoring floating sea stations to a sea bed foundation, comprising a force transmitting member connected between the floating station and the sea bed foundation, and at least one joint assembly connected between at least one of the floating sea stations and the force transmitting member and the foundation and the force transmitting member, said joint assembly comprising an inner spherical body, an outer spherical body arranged over and slidably embracing said inner spherical body, a first connecting member connected to one of said floating sea station, said foundation and said force transmitting member, a second connecting member connected to said outer spherical body and adapted to be connected to one of said foundation, said floating sea station and said force transmitting member, said inner and outer spherical bodies having spherical surfaces facing each other with at least one of said spherical surfaces having two spaced apart annular zones each on one side of an equational plane of said at least one of said spherical surfaces, and a lining of a material permitting reduced frictional an wear sliding engagement on each annular zone.

4,455,109

BARGE HULL FOR OFFSHORE DRILLING RIGS

David B. Lorenz, Houston, Tex., assignor to Marathon Manufacturing Company, Houston, Tex.

Filed May 1, 1981, Ser. No. 259,714
Int. Cl.³ E02B 17/08; B63B 1/32
U.S. Cl. 405—203 6 Claims



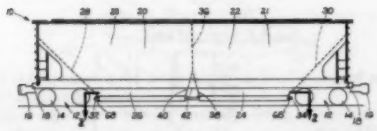
1. A barge hull for an offshore drilling rig including
a barge hull body having a substantially flat bottom; and
means forming a channel in the bottom of said barge hull body for directing the flow of water under said barge hull body to the back of said barge hull to reduce the towing resistance of said barge hull,
the top of said channel being formed by a substantially flat portion of said barge hull body extending from the substantially flat bottom of said barge hull body to the back of said barge hull body and inclined at an angle between approximately 11 degrees and approximately 15 degrees with respect to the bottom of said barge hull body,
said channel having a width which is less than one half of the overall width of the back of said barge hull.

4,455,110

HIGH VOLUME RAILWAY HOPPER CAR

Dennis J. Schipper, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Feb. 22, 1982, Ser. No. 350,941
Int. Cl.³ B65G 53/36
U.S. Cl. 406—39 14 Claims



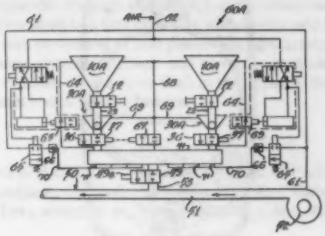
1. A high volume hopper car outlet arrangment comprising:
at least one large outlet extending longitudinally substantially the entire distance between railway car trucks; each outlet including outlet side slope sheets which extend inwardly and downwardly from an outlet mounting frame on either side of the outlet from a location below the top of the car wheels; said outlet further including a pair of center outlet slope sheets extending longitudinally and downwardly and away from each other, and defining an apex therebetween; on each side of the outlet an outlet side slope sheet and an outlet center slope sheet being laterally spaced to define a discharge opening extending longitudinally on each side of the outlet; a discharge conduit extending longitudinally below each said discharge opening; said discharge conduit being continuous below each side portion of the outlet; and being discontinuous in an area between said discharge opening; said discharge conduit adapted to receive a pneumatic unloading conduit.

4,455,111

PRESSURE CONVEYOR FOR FEEDING PULVERULENT MATERIAL INTO A PRESSURIZED AIR CONVEYOR PIPELINE

Carroll V. Jackson, Northbrook, and Hazelton H. Avery, Aurora, both of Ill., assignors to United Conveyor Corporation, Deerfield, Ill.

Filed Jun. 29, 1981, Ser. No. 278,060
Int. Cl.³ B65G 53/48
U.S. Cl. 406—56 6 Claims



1. A system for moving pulverulent material from a receiving hopper into a pressurized air conveyor pipeline comprising, in combination:
pressurized mechanical conveyor means which has an effectively airtight casing, a material inlet in the top of said casing, a material outlet in the bottom of the casing remote from said inlet, said outlet communicating with the top of the air conveyor pipeline, and rotatably driven auger conveyor means in said casing to move material from said inlet toward said outlet, said auger conveyor means comprising a shaft with a helical flight thereon the diameter of which is substantially less than that of the casing, and said shaft being so located in the casing that said flight has a circle of rotation slightly out of contact with the lowermost part of the casing;
mechanical transfer conveyor means for moving material from the receiving hopper and dropping it by gravity into said material inlet at a controlled rate;
a primary valve means to control movement of material through said inlet;
secondary valve means to control movement of material through said outlet;
means for varying the air pressure in said casing between receiving hopper pressure and pipeline pressure, said means comprising a plurality of air pressure pipes for admitting air at pipeline pressure to the lower part of said casing, said pipes being spaced along the casing between the material inlet and the material outlet and entering said casing transversely substantially tangent to the lowermost part thereof so air from said pipes enters the space in the casing below the auger flight, and an air discharge pipe for releasing air from the casing;
and control means for filling said casing at receiving hopper pressure and emptying said casing at pipeline pressure in a predetermined continuous cycle.

4,455,112

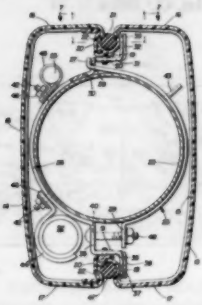
ENCLOSURE CONSTRUCTION FOR REMOTE BANKING PNEUMATIC TUBE SYSTEMS

Walter G. Anders, North Canton, Ohio, assignor to Diebold, Incorporated, Canton, Ohio

Filed May 3, 1982, Ser. No. 374,014
Int. Cl.³ B65G 51/26
U.S. Cl. 406—110 9 Claims

1. Enclosure construction for pneumatic tubes and power and control cables installed overhead for remote visual auto teller banking systems; including a tubular enclosure section generally rectangular in cross section having first and second

paired half-members with laterally spaced, longitudinally extending, edge formations; each edge formation on the first paired half-member comprising an inturned concave flange and a Z-shaped portion connected to said concave flange and spaced therefrom to form an outwardly opening groove; each edge formation on the second paired half-member comprising an inturned concave flange; the spaced second paired half-



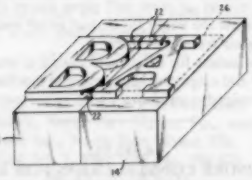
member concave flanges being snap-engaged, respectively, with the Z-shaped portions of the spaced first paired half-member to form laterally spaced joints in the enclosure section; a gasket in each groove engaged with the concave flanges of the first and second paired half-members along each joint; separable clamp members clamped to a pneumatic tube being enclosed; and means connecting at least one of said paired half-members with at least one of said clamp members.

4,455,113

METHOD OF PRODUCING GROUPED SYMBOLS

Steve Liebman, Fort Lee, N.J., assignor to Namecraft Manufacturing Corp., Hackensack, N.J.

Filed Sep. 11, 1981, Ser. No. 301,277
Int. Cl.³ B23C *1/16*; B23Q *33/00*
U.S. Cl. 409—84 **11 Claims**



1. In a method of producing identifiable symbols, arranged in a group in one piece free from any soldered connection therebetween, from a plate having a predetermined height, with the aid of a multiplicity of master symbols selected from a set of master symbols representing said arranged symbols, each master symbol having throughout its major portion a certain thickness, and each master symbol defining contours, and with the aid of a transfer mechanism and metal-removing mechanism for feeling said contours to transfer said contours substantially onto said plate while removing metal therefrom, the steps comprising,

removing said metal portions throughout said height from said plate near the contours of each respective arranged symbol so as to define at least a substantial portion of each arranged symbol sufficient to identify the master symbol corresponding thereto, and

providing selected of said master symbols with respective connective portions adjacent certain portions of the contour of the master symbols, and at least a portion of said connective portions comprises a thickness less than said certain thickness,

removing selected metal portions from said plate from above to a certain depth smaller than said predetermined height between said arranged symbols so as to preserve connecting portions therebetween and between parts of said plate corresponding to a selected master symbol and any of its connective portions, thereby obtaining said group of arranged symbols in said one piece,

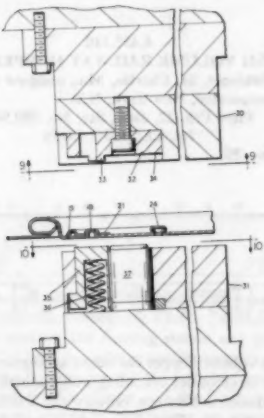
at last some of the remaining parts of the predetermined height corresponding to said connective portions of said selected master symbols creating the appearance of bridging portions above said connecting portions and being separate from the corresponding adjacent arranged symbols, thereby partially masking said connecting portions.

4,455,114

METHOD FOR MAKING A METALLIC-CONVENIENCE CLOSURE

Edgar H. Zysset, Orlando, Fla., assignor to General Can Company, Inc., City of Industry, Calif.

Continuation-in-part of Ser. No. 301,554, Sep. 14, 1981, Pat. No. 4,394,927. This application Apr. 26, 1982, Ser. No. 372,042
Int. Cl.³ B21D *51/00*
U.S. Cl. 413—14 **2 Claims**



1. In the method of manufacture of a metallic-convenience closure for a cylindrical container comprising a panel, an endless severing line formed in the panel and defining a central removable portion and a peripheral fixed portion, means forming a part of the fixed portion for attaching a closure to the end of a container to close the end, and a manually graspable pull-tab attached to the removable portion of the panel and having a nose portion movable upon lifting of the tab into position adjacent the score line for severing the score line, said tab including a first portion riveted to said removable portion of the panel, a second portion extending radially outwardly toward the score line and terminating in said nose portion, and a manual grasping portion integral with the second portion and

extending radially inwardly, said removable portion of the panel having a portion thereof deformed adjacent the first portion of the tab preventing rotation of the tab about the axis of the rivet thereby maintaining registry of the nose portion of the score line during the opening of the convenience closure, which method comprises the steps of,

attaching the pull-tab to the closure with the second portion of the pull-tab extending radially outwardly toward the score line of the panel,

applying a clamping force to the first portion of the manual graspable portion,

applying an opposing yielding clamping force to the first portion of the pull-tab attached to the removable portion of the panel,

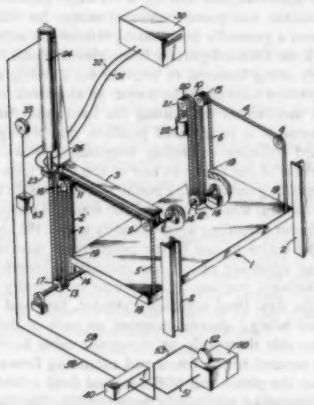
applying an opposing force to the portion of the panel surrounded by the graspable portion of the pull-tab to deform the portion upwardly into the area surrounded by the graspable portion.

4,455,115

HYDRAULIC SHEET STACKING AND WEIGHING SYSTEM

Richard N. Alger, Moulton, Ga., and John A. Hall, Lexington, Ala., assignors to Champion International Corporation, Stamford, Conn.

Filed Jul. 26, 1982, Ser. No. 401,876
Int. Cl.³ B65H *31/08*
U.S. Cl. 414—21 **6 Claims**



1. An apparatus for receiving a stack of sheets of material, said apparatus comprising:

(a) a table for receiving and supporting sheets fed serially thereto to form a stack of the sheets on said table;

(b) guide means for guiding said table in vertical reciprocal movement;

(c) a first pair of chains secured to said table on a first side thereof, one of said first pair of chains being journaled on first and second sprockets disposed above said first side of said table, and the other of said first pair of chains being journaled on a third sprocket disposed above said first side of said table;

(d) a drive shaft disposed below said table;

(e) a first pair of drive sprockets mounted on said drive shaft with said first pair of chains being journaled on said first pair of drive sprockets;

(f) a second pair of chains secured to said table on a second side thereof, one of said second pair of chains being journaled on fourth and fifth sprockets disposed above said second side of said table, and the other of said second pair of chains being journaled on a sixth sprocket disposed above said second side of said table;

(g) a second pair of drive sprockets mounted on said drive shaft with said second pair of chains being journaled on said second pair of drive sprockets;

(h) a cylinder mounted above said table, said cylinder containing a piston reciprocally mounted therein and said piston having a rod portion protruding from said cylinder;

(i) said second pair of chains being secured to said rod portion of said piston; and

(j) means for supplying fluid to said cylinder to cause selected reciprocal movement of said piston in said cylinder with movement of said piston in a retracting direction being operable through said second pair of chains to rotate said drive shaft in a first direction whereupon said table is lifted, and movement of said piston in a protracting direction being operable through said second pair of chains to allow rotation of said drive shaft in the opposite direction whereupon said table is lowered.

4,455,116

DRILL PIPE HANDLING AND STORAGE APPARATUS

Ernst L. Lindstedt, Garland, and Robert W. Hisey, Richardson, both of Tex., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Nov. 10, 1981, Ser. No. 320,159
Int. Cl.³ E21B *19/14*
U.S. Cl. 414—22 **12 Claims**

1. Apparatus for handling and storing a plurality of drill pipe sections for use with a drilling rig having an upright mast and a rotary driving member mounted for movement along said mast, said apparatus comprising:

(a) a carousel adapted to rotate about a first axis, said carousel being pivotally mounted to said mast about a second axis essentially parallel to the first axis, said carousel comprising:

(1) a central frame having an axis of rotation coincident with the first axis of rotation of said carousel, said frame defining a plurality of pipe receptacles, each for receiving a section of drill pipe;

(2) a plurality of sets of pipe clamps corresponding to said plurality of pipe receptacles movably mounted on said frame, each of said pipe clamps being movable between a first position for retaining the section of drill pipe within a corresponding pipe receptacle and a second position releasing the drill pipe;

(3) a plurality of rotatably mounted pipe clamp rods for actuating pipe clamps to shift said pipe clamps between the first and second positions;

(4) clamp shifting apparatus for shifting said pipe clamp rods to thereby shift a respective pipe clamp between the first and second positions; and

(5) a clamp rod locking mechanism for selectively locking

said pipe clamp rods against rotation to thereby lock respective said pipe clamps in the first or second positions;

(b) a pair of spaced support arms for pivotally-mounting said carousel to said mast;

(c) carousel rotating means for selectively rotating said carousel about the first axis; and

(d) carousel indexing and locking means for selectively indexing and locking said carousel relative to said support arms.

4,455,117

APPARATUS FOR THE EMPTYING OF CIGARETTE TRAYS INTO MAGAZINES

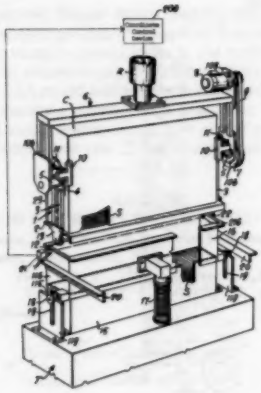
Italiano Cartoceti, Bologna, Italy, assignor to Cir S.p.A. Divisione Sasib, Bologna, Italy

Division of Ser. No. 171,424, Jul. 23, 1980, Pat. No. 4,403,908. This application Dec. 2, 1982, Ser. No. 446,199

Claims priority, application Italy, Jul. 31, 1979, 12699 A/79

Int. Cl.³ B65G *65/32*

U.S. Cl. 414—295 **4 Claims**



1. Apparatus for the emptying of trays filled with rod-like articles wherein each of said trays has at least one discharge side for the discharge of said articles, comprising

a feed hopper having an inlet mouth for receiving said rod-like articles;

a telescoping member interposed between said tray and said feed hopper, said telescoping member supporting said tray and having an upper open end connected with the discharge side thereof, the lower end of said telescoping member being slideably mounted with respect to the upper end of said feed hopper;

means for moving said telescoping member in the vertical direction from a raised starting position to a lower discharge position at which the uppermost layer of rod-like articles in said feed hopper are at substantially the same vertical level as the lowermost layer of rod-like articles in said tray; and

transferring means for transferring said rod-like articles from the discharge side of said tray to the inlet mouth of said feed hopper, the uppermost layer of rod-like articles in said feed hopper being substantially in contact with the lowermost layer of rod-like articles in said tray, the articles in said tray being transferred to said feed hopper without subjecting said articles to a free drop between said tray and said feed hopper.

4,455,118

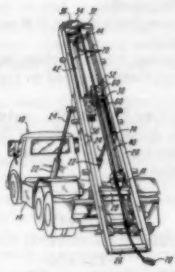
OPPOSED CYLINDER CABLE HOIST MECHANISM

Heino W. Scharf, Knoxville, Tenn., assignor to Dempster Systems Inc., Knoxville, Tenn.

Filed Sep. 18, 1981, Ser. No. 303,545

Int. Cl.³ B60P *1/16*

U.S. Cl. 414—494 **4 Claims**



1. In a vehicle including a chassis supporting an elongated load support frame for pivotal movement on a horizontal axis, the frame including parallel spaced longitudinally extending frame members rigidly connected by longitudinally spaced cross frame members and having a forward portion and a rearward portion, and power actuated means for tilting the frame between a generally horizontal position and an inclined position with the forward portion being elevated and the rearward portion being lowered to provide for moving a refuse container or other load onto the frame, an improved and simplified hoist mechanism for pulling the load onto the frame while the frame is in its inclined position, comprising a first fluid actuated cylinder extending longitudinally within the forward portion of the frame to one of the cross frame members and supporting an actuating piston rod extendable longitudinally into the rearward portion of the frame, a second fluid actuated cylinder extending longitudinally within the rearward portion of the frame to one of the cross frame members and supporting an actuating piston rod extendable longitudinally within the forward portion of the frame in laterally spaced relation to the first fluid actuated cylinder, first and second sheaves, there being a sheave mounted on each of the piston rods and movable therewith, an elongated cable having one end portion secured to the frame and extending forwardly to the sheave on the piston rod of the second fluid cylinder, the cable than extending rearwardly between the fluid actuated cylinders to the sheave on the piston rod of the first fluid actuated cylinder, a third sheave supported by the forward end portion of the frame, the cable extending forwardly from the sheave on the piston rod of the first fluid actuated cylinder to the third sheave, and the cable extending rearwardly from the third sheave and having a rearward end portion with means for connecting to the load.

4,455,119

TRAILER APPARATUS

Earl D. Smith, Phoenix, Ariz., assignor to Dallas Smith Engineering Corp., Phoenix, Ariz.

Filed Jun. 29, 1981, Ser. No. 278,090

Int. Cl.³ B60P *1/00, 1/44, 3/08*; B61D *3/16*

U.S. Cl. 414—537 **1 Claim**

1. A trailer apparatus, for transporting vehicles and other types of cargo, which comprises:

an enclosed body including a pair of upstanding side walls and a floor;

a door mounted to an end of said body;

wheel means connected with said body for carrying said body along a support surface;

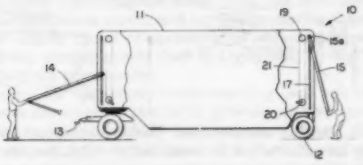
hitch means connected with one of said body and said wheel means for connecting said body with a towing vehicle;

first track means mounted within said body for carrying vehicles within said body; and

second track means mountable to said body for providing a ramp connection between said first track means and the support surface to enable the loading and unloading of vehicles onto said first track means,

said first track means including at least one pair of tracks having a first, extended position for supporting a vehicle and a second, retracted position for permitting the carrying of other cargo in said body,

said apparatus further including locking means for locking a vehicle in position on the pair of tracks, said locking means including several pairs of rollers, each pair of rollers being positionable one roller on each side of one of the tires of a vehicle to be carried within said apparatus, said locking means further including moving means for selectively moving the rollers on each pair toward and away from one another to provide a space therebetween for reception of the tire,



said body including support means positioned beneath a vehicle being transported by said apparatus, whereby the vehicle rests upon and is supported by said support means when the pairs of rollers are spaced apart to receive the vehicle's tires therebetween

said moving means including connector means for connecting one roller in a pair of rollers with the other roller in the pair of rollers and for causing the rollers to move toward and away from each other upon rotation of one of the rollers,

said moving means including gear means drivingly connecting at least a first roller of one of said pairs of rollers with at least a second roller on one of said other pairs of rollers, whereby rotation of said first roller causes rotation of said second roller to provide control of the spacing of the rollers in the respective pair of rollers.

4,455,120

APPARATUS FOR WEIGHT BALANCING AN INDUSTRIAL ROBOT

Hans Richter, Augsburg, Fed. Rep. of Germany, assignor to Gesellschaft fur digitale Automation mbH, Munich, Fed. Rep. of Germany

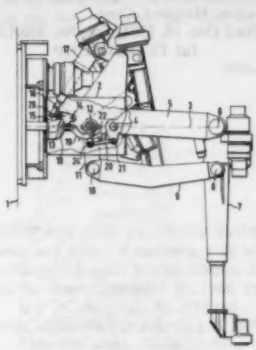
Filed Feb. 24, 1982, Ser. No. 351,693

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1981, 3107013

Int. Cl.³ B25J *11/00*

U.S. Cl. 414—719 **12 Claims**

1. In an industrial robot of the type comprising a frame mounted for rotation about a horizontal first axis, a pivot arm one end of which is pivotally attached to said frame for pivotal movement relative to said frame about a second axis extending transverse to said first axis, the other end of said pivot arm being pivotally attached to a boom at a third axis which extends parallel to said second axis, and a counterbalancing device is provided for equalizing the weight of said boom as the position of said boom is varied, the improvement wherein said counterbalancing device comprises a toggle lever mounted for pivotal motion about a fixed horizontal fourth axis that extends at right angles to said horizontal first axis, means for applying a counterbalancing force to said toggle lever at a first point thereon which is spaced from said first and fourth axes, and a linkage interconnecting said toggle lever to said pivot arm, one end of said linkage being pivotally connected to said toggle lever at a second point thereon which is located on the other side of said fourth axis relative to said first point, the other end of said linkage being pivotally connected to said pivot arm at a fifth axis which is parallel to and spaced from said second axis.



4,455,121

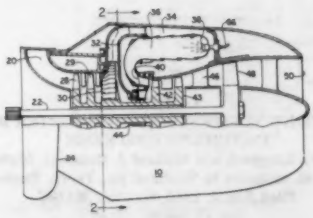
ROTATING TURBINE STATOR

Hsianmin F. Jen, Milford, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Nov. 1, 1982, Ser. No. 438,038

Int. Cl.³ F01D *9/00*

U.S. Cl. 415—143 **6 Claims**



1. In a gas turbine engine having an integrally connected rotary diffuser and first stage turbine nozzle assembly useful with a centrifugal compressor of the type having a shaft-driven radial-flow impeller for delivering compressible gas, said diffuser-nozzle assembly comprising:

a rotary diffuser stage having a pair of annular axially spaced front and rear sidewalls, each of said sidewalls having an inner and an outer circumference, said inner circumference closely surrounding the periphery of said impeller, said diffuser stage further having a plurality of symmetrically arranged wedge-shaped vanes mounted between said spaced sidewalls, the annular space between said sidewalls and said vanes defining flow passages for receiving gas radially discharged from said impeller, said diffuser stage being mounted for rotation substantially about the axis of the engine; and

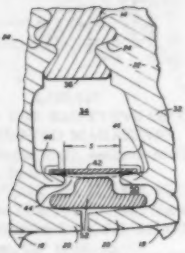
a first stage turbine nozzle consisting of an annular hub circumscribed by a nozzle diaphragm having an inner and outer shroud ring between which there are a multiplicity of symmetrically positioned vanes of airfoil design, the hub region of the turbine nozzle being integrally connected with said rear sidewall of said diffuser, said first stage turbine nozzle being mounted for rotation with said diffuser.

4,455,122

BLADE TO BLADE VIBRATION DAMPER

Russell A. Schwarzmann, Marlborough, and Herbert J. Lillibridge, Plainville, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 14, 1981, Ser. No. 330,423
Int. Cl.³ F01D 5/10
U.S. Cl. 416—190 2 Claims



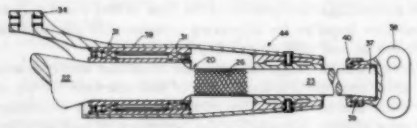
1. Apparatus for dampening rotor blade vibratory energy which is characterized by a damper disposed beneath the platforms of two adjacent rotor blades and a plate-like seal inwardly of the damper which is radially restrained by the adjacent rotor blades, wherein the spacing of said seal from the damper is sufficiently close such that under centrifugal loading the midportion of the seal deflects to bear against the damper, thereby augmenting the energy dissipation capacity of the damper.

4,455,123

CONNECTING ELEMENT AND HELICOPTER ROTOR INCORPORATING SAME

Roy Sanders, Langport, and Michael J. Redstone, Malton, both of England, assignors to Westland plc, Yeovil, England

Filed Jun. 1, 1982, Ser. No. 384,045
Int. Cl.³ B64C 27/38
U.S. Cl. 416—134 A 16 Claims



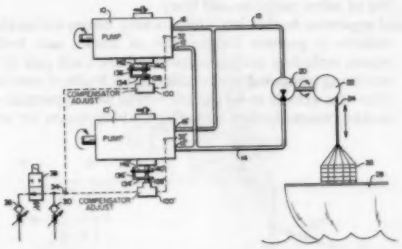
1. A helicopter rotor having a rotor hub and a plurality of radially extending rotor blades and including, for each blade, an elongate connecting element constructed of a plurality of individual fibre filaments extending longitudinally and substantially continuously throughout its length and including an inner and outer end regions wherein said filaments are embedded in a resin matrix material and an intermediate region wherein said filaments are embedded in a resilient elastomer matrix material, said inner end region extending from the rotor hub and adapted to be resiliently flexible in a blade flap plane, and blade pitch change means rotationally fixed to the outer end region and adapted during operation to twist the outer end region relative the inner end region to effect blade pitch changes.

4,455,124

AUTOMATIC PRESSURE SETTING ADJUSTMENT FOR A PRESSURE COMPENSATED PUMP

Ellis H. Born; William H. Meisel, both of Columbus, and Paul B. Wolfe, Dublin, all of Ohio, assignors to Abex Corporation, Stamford, Conn.

Filed Dec. 20, 1982, Ser. No. 450,839
Int. Cl.³ F04B 49/00
U.S. Cl. 417—218 2 Claims



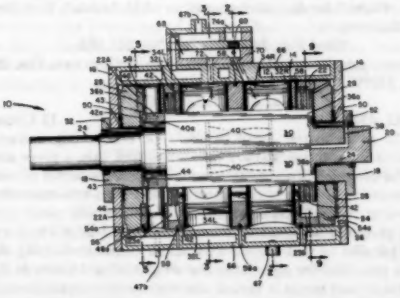
1. A variable displacement, pressure compensated pump having an outlet which is connected to a fluid header and an inlet, which comprises: pressure compensator means for changing the displacement of the pump when fluid pressure in the pump outlet equals the pressure setting of the pressure compensator including means for providing a pressure setting for the compensator means, means affixed to the pump for sensing the displacement of the pump, means for automatically adjusting the pressure setting of the pressure compensator in response to changes in displacement of the pump, conduit means for connecting the pressure compensator setting means and the automatic compensator adjustment means, and the automatic compensator adjustment means is connected to the displacement sensing means such that it automatically reduces the pressure setting of the pressure compensator when the displacement of the pump increases to increase pump flow and increases the pressure setting of the pressure compensator when the displacement of the pump decreases to reduce pump flow.

4,455,125

ROTATING CYLINDER FLUID PRESSURE DEVICE

Everett F. Irwin, 430 Orangewood Dr., Dunedin, Fla. 33528

Filed Dec. 15, 1980, Ser. No. 216,628
Int. Cl.³ F04B 29/00; F01B 13/06
U.S. Cl. 417—244 7 Claims



1. In a rotary-operated gaseous fluid displacement device embodying a stationary housing having fluid intake and discharge ports, and embodying a conjointly rotatable eccentrically disposed piston-supporting rotary shaft and radial-piston-

chambered block components within the housing, said rotary shaft disposed eccentrically within an open axial aperture provided within said rotary block component, and having pistons movable between top dead center (TDC) and bottom dead center (BDC) positions respectively during operation, said housing having a cylindrically-shaped internal peripheral wall and opposed end walls disposed transversely to the axis of the cylindrical wall, the improvement wherein:

(a) said shaft having a medial portion with at least one pair of diametrically opposed parallel planar surfaces spaced equidistantly from the shaft axis, said planar surfaces disposed for operative reciprocating engagement by the correspondingly disposed pistons;

(b) said rotary block having at least two axially spaced banks of corresponding even-numbered circumferentially spaced radial piston chambers;

(c) a piston complementally and slidably disposed within each of said diametrically opposed piston chambers and respectively being fully radially extended and radially retracted when in the respective TDC and BDC positions attendant piston travel; said travel constituting sequential 180 degree cycles of operation for imparting operative driving rotation to said shaft and conjointly to said rotatable block components;

(d) means for operatively interconnecting each pair of diametrically opposed pistons to provide positive synchronous reciprocative fluid-displacement movement thereto responsive to driven rotation of said shaft, said means maintaining a continuous engagement between the respective planar base plates and planar surfaces of said shaft during rotary operation of said device; and

(e) said corresponding pistons and chambers of the adjacent two banks being longitudinally aligned with one another; said corresponding aligned pairs of pistons being fixedly mounted upon a common elongated generally planar base plate; and each of said base plates having a complemental planar undersurface for reciprocating engagement by the corresponding planar face of said shaft during rotational operation of said device.

4,455,126

FUEL PUMPING APPARATUS

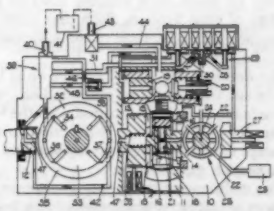
Colin P. Brotherston, Rainham, England, assignor to Lucas Industries plc, Birmingham, England

Filed Apr. 14, 1982, Ser. No. 368,152

Claims priority, application United Kingdom, Apr. 23, 1981, 8112549

Int. Cl.³ F04B *19/02, 23/12*

U.S. Cl. 417—252 **4 Claims**



1. A fuel pumping apparatus for supplying fuel to a compression ignition engine comprising a body part and an injection pump mounted therein, a cavity defined by the body part, a drive shaft extending into said cavity, means coupling the drive shaft to a rotary part of the injection pump, a low pressure supply pump for supplying fuel at low pressure to the injection pump, a fuel inlet to the low pressure supply pump, a relief valve for controlling the output pressure of the supply pump, characterized in that the fuel inlet for said low pressure pump is connected to said cavity by way of a path which includes a passage formed in said drive shaft and the apparatus includes a fuel inlet connection opening into said cavity for connection in use to a fuel tank, the arrangement being such that air entering the cavity will be drawn by vortex action to the entrance of said passage, the air being drawn into the low pressure supply pump to impede the flow of fuel to the injection pump.

4,455,127

COMPACT SIZE PLUNGER PUMP

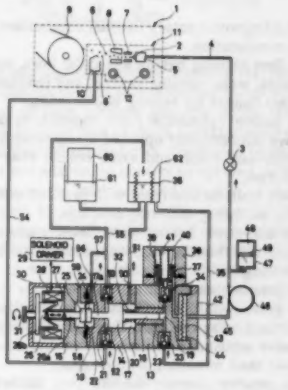
Toshiaki Tabuchi, and Yoichi Shimazawa, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 173,880, Jul. 31, 1980. This application Dec. 6, 1982, Ser. No. 447,193

Claims priority, application Japan, Aug. 3, 1979, 54-99644

Int. Cl.³ F04B *17/04, 21/06*

U.S. Cl. 417—418 **2 Claims**



1. A compact size plunger pump comprising:

a first cylinder block;

a first piston disposed in said first cylinder block for determining a first pressure chamber, said first pressure chamber introducing a liquid from a reservoir and developing the liquid at a constant flow rate;

a second cylinder block coaxially connected to said first cylinder block;

a second piston coaxially connected to said first piston, said second piston being disposed in said second cylinder block for determining a second pressure chamber, wherein the volume of said second pressure chamber is greater than the volume of said first pressure chamber;

a plunger coaxially connected to said second piston for reciprocating said first and second pistons within said first and second cylinder blocks;

an electromagnetic solenoid for attracting said plunger in a predetermined direction; and

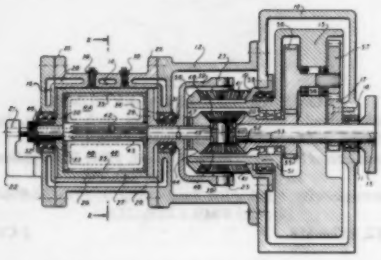
communicating means for directly communicating said second pressure chamber to said reservoir through a thin opening which permits bi-directional liquid fluid flow so that during a pump intake stroke the liquid is filled in said second pressure chamber and a fluid resistance is created at said thin opening, thereby decelerating the reciprocating movement of said plunger and said first and second pistons.

4,455,128

ROTARY INTERNAL COMBUSTION ENGINE WITH UNIFORMLY ROTATING PISTONS COOPERATING WITH REACTION ELEMENTS HAVING A VARYING SPEED OF ROTATION AND OSCILLATING MOTION

Frederick W. Seybold, 1979 Dogwood Dr., Scotch Plains, N.J. 07076

Filed Dec. 14, 1981, Ser. No. 330,678
Int. Cl.³ F02B *53/00*
U.S. Cl. 418—34 **7 Claims**



1. An improved rotary internal combustion engine comprising in combination:

a. a first housing having a circular bore, exhaust and intake ports, water cooling cavities and ignition means,

b. two flanges for bolting said housing,

c. a hollow cylindrical rotor rotatable in said circular bore, two diametrically opposed wedge-shaped pistons integral with said rotor, and axial, helical slots adjacent to said pistons,

d. side walls on said rotor with first and second hubs thereon for mounting snap-ring bearings,

e. an end cover having water cooling cavities and bolted to said first housing and supporting one of said snap-ring bearings,

f. a yoke secured to one of said hubs,

g. a hollow multiple-splined shaft journalled in said first and second hubs, one end of said shaft being threaded to receive adjustable locking means, the other longer end of said shaft mounting a miter gear,

h. a reactor element having two diametrically opposed wedge-shaped means integral with a long hub, said hub being splined and mounted on said multiple-splined shaft, and grooves in said wedge-shaped means to receive seals,

i. a second housing having water cooling cavities and supporting the other of said snap-ring bearings and being bolted to said first housing,

j. a third larger housing having bolted thereto said second housing,

k. a drive shaft supported on a first ball bearing held in said third housing,

l. a large flywheel secured to said drive shaft, said flywheel having a long hub extending into said second housing and having a large bevel gear secured to said long hub,

m. a second large, flanged bevel gear is secured to said third housing, and a ball bearing in said flange is supporting said long hub of said flywheel,

n. bevel pinions rotating on studs held in said yoke and mating with said large bevel gear and said flanged bevel gear,

o. a first compound gear mounted on ball bearings supporting on said flywheel, said compound gear comprising a first spur gear and a first elliptic gear,

p. a second ellipitc gear secured to said third housing and mating with said first elliptic gear,

q. a second compound gear mounted on roller bearings and comprising a second spur gear mating with said first spur gear and a miter gear, said second compound gear being feee to rotate on said drive shaft,

r. a second shaft inserted freely within said hollow multiple-splined shaft, and having on one end a second yoke with studs on which miter pinions are free to rotate and mating with said miter on said multiple-splined shaft and the miter gear of said second compound gear,

s. said second shaft being secured to a bracket bolted to said end cover,

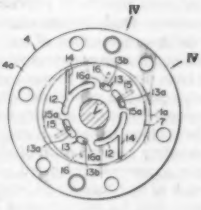
t. whereby, after ignition, the expanding gas causes the reactor element at first to turn in a direction opposite to that of the piston and to exert a useful driving force on the piston as well as on the reactor element, thereby augmenting the delivered power of the engine substantially.

4,455,129

MULTI-VANE TYPE COMPRESSOR

Katsumi Sakitani, Kawachinagano; Takashi Maekawa, Sakai; Satoru Fujimoto, Tondabayashi; Tetsuro Tajima, Sakai, and Makoto Hiroyasu, Osaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Sep. 14, 1981, Ser. No. 302,085
Claims priority, application Japan, May 21, 1981, 56-74340[U]; Jul. 22, 1981, 56-109671[U]
Int. Cl.³ F01C *21/04*; F03C *2/00*
U.S. Cl. 418—82 **4 Claims**



1. A multi-vane type compressor comprising:

a cylinder formed with at least a suction port and at least a discharge port;

a front head having a flat face for closing one end of said cylinder;

a rear head having a flat face for closing the other end of said cylinder;

a rotor arranged in said cylinder, said rotor having a peripheral surface, flat opposite end surface juxtaposed against said faces respectively, and a plurality of vane grooves opening in said peripheral surface and said opposite end surfaces;

a plurality of vanes each slidably inserted in one of said plurality of vane grooves, each said vane defining by its end surface and the bottom of the associated vane groove a vane back pressure space;

means for defining first supply groove on at least one of the faces of said front head and said rear head, said first supply groove being in fluid connection with the vane back pressure spaces of the vanes in the suction stroke;

first passage means (**14**) for exposing said first supply groove to the suction gas pressure;

means for defining second supply groove on at least one of the faces of said front head and said rear head, said second supply groove being in fluid connection with the vane back pressure spaces of the vanes in the discharge stroke, said second supply groove including a trailing side portion (**13*a***) disposed posteriorly with respect to the direction of movement of the vanes and a leading side portion (**13*b***) disposed anteriorly with respect thereto;

second passage means (**15**) for exposing said trailing side portions (**13*a***) to the discharge gas pressure; and

third passage means (**16**, **17**, **13*b'***) for exposing said leading side portions (**13*b***) to the discharge gas pressure:

said third passage means having throttling function with respect to the fluid flowing therethrough, whereby a

pressure higher than the discharge gas pressure can be produced in the vane back pressure spaces when the vanes are forced into the vane grooves.

4,455,130

GEAR MACHINE WITH OPPOSITELY ALIGNED SEALING ELEMENTS

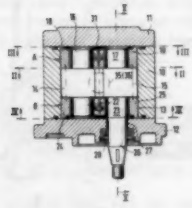
Wilhelm Dworak, Stuttgart; Siegfried Mayer; Karl-Heinz Müller, both of Vaihingen; Wolfgang Talmon, Oetisheim, and Günter Wolff, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 8, 1982, Ser. No. 355,535

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1981, 3113939

Int. Cl.³ F03C *2/08*

U.S. Cl. 418—132 **9 Claims**



1. A hydraulic gear machine, especially for use as a hydraulic gear motor, comprising a housing defining a chamber; a pair of gear elements each having an axis and including a peripheral gear portion and two shaft portions extending to opposite axial sides of said gear portion; means for so mounting said gear elements in said chamber for rotation that said axes are arranged in a common plane and said gear portions mesh with one another, said mounting means including respective bearings for said shaft portions having respective end surfaces bounding axially spaced interfaces with said housing, at least said bearings being mounted for limited axial displacement in said chamber; and means for urging said bearings into contact with said gear elements during the operation of the machine, including sealing means bounding a pressure compartment in each of said interfaces and delimiting a pressure zone on each of said end surfaces, said sealing means including at each of said interfaces a sealing member extending in the respective interface along a course substantially reminiscent of that of the numeral three, said course of said sealing member situated at one of said interfaces being reversed relative to that of said sealing member situated at the other axially spaced interface; and means for admitting pressurized hydraulic medium into at least one of said pressure compartments to act on the respective pressure zone and axially displace the respective bearing toward the associated gear element.

4,455,131

CONTROL DEVICE IN A HELICAL SCREW ROTOR MACHINE FOR REGULATING THE CAPACITY AND THE BUILT-IN VOLUME RATIO OF THE MACHINE

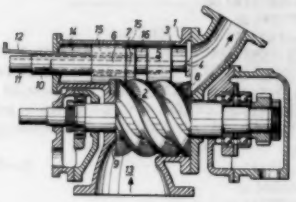
Olaf Werner-Larsen, Nacka, Sweden, assignor to Svenska Rotor Maskiner Aktiebolag, Nacka, Sweden

Filed Nov. 2, 1981, Ser. No. 317,469

Int. Cl.³ F01C *1/16, 21/12*; F04B *29/00*

U.S. Cl. 418—201 **6 Claims**

1. A control device in a helical screw rotor machine for elastic fluid comprising a casing provided with a barrel portion defined by intersecting bores with parallel axes located between axially spaced end walls of the casing and having inlet and outlet ports communicating with the bores, each rotor having helical lands and intervening grooves, the male rotor lands having their major portions radially outside the pitch circle of the male rotor and with convexly curved flanks, the female rotor lands having their major portions radially inside the pitch circle of the female rotor and with concavely curved flanks, the lands and grooves of the rotors intermeshing to form with the bores chevron-shaped working chambers each comprising communicating portions of a male and a female rotor groove, the chevron-shaped chambers being defined at their base ends by the stationary end walls of the casing and at their apex ends by the intermeshing lands of the rotors, the volumes of said chevron-shaped chambers being varied as the rotors revolve, and a valve means comprising a first and a second axially aligned and separately operated valve member for regulating the quantity of elastic fluid passing through the



machine and the pressure ratio thereof, respectively, said valve members being slidable in an axially extending recess formed in the casing so as to open directly into the bores, the valve members having an inner face of shape complementary to the envelope of that portion of the bores confronted by the opening of the recess and adapted to control an opening venting the working chamber to the inlet port and the area of the outlet port, characterized by at least one additional valve member which is axially aligned with said first and second valve members and movable between them in contact with the end of either of them to form an extension of either of said valve members, which additional and first and second valve members, respectively, are connected to an operating device adapted to permit displacement of all the valve members.

4,455,132

VOLUMETRIC COMPRESSOR OF THE ROOTS TYPE

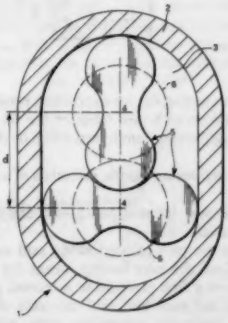
Pier P. Messori, Pino Torinese, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Feb. 23, 1983, Ser. No. 468,839

Claims priority, application Italy, Feb. 23, 1982, 67192 A/82

Int. Cl.³ F01C *1/18, 1/24*

U.S. Cl. 418—206 **2 Claims**



1. A rotary volumetric compressor of the Roots type, including two double-lobed rotors with respective axes of rotation and respective major and minor axes, wherein each rotor has a

profile which, for each of the four quadrants defined by the major and minor axes of the rotor, is constituted by seven arcs of circles extending from the point of intersection with the minor axis to the point of intersection with the major axis, and wherein the coordinates (XC_1 to XC_7; YC_1 to YC_7) of the respective centres of curvature (C_1 to C_7) of the arcs in a frame of reference having its origin at the centre of the rotor, its axis of the abscissae (X) coincident with a minor semi-axis of the rotor, and its axis of the ordinates (Y) coincident with a major semi-axis of the rotor, and the values of the respective radii of curvature (R_1 to R_7) of the arcs, are as follows:

$XC_1 = 0.538972$ d;
$YC_1 = 0$;
$R_1 = 0.354967$ d;
$XC_2 = 0.581260$ d;
$YC_2 = -0.005147$ d;
$R_2 = 0.397564$ d;
$YC_3 = -0.671833$
$YC_3 = 1.311256$ d;
$R_3 = 1.419868$ d;
$XC_4 = 0.239369$ d;
$YC_4 = 0.379889$ d;
$R_4 = 0.116903$ d;
$XC_5 = 0$;
$YC_5 = 0.449147$ d;
$R_5 = 0.366084$ d;
$XC_6 = 0.070711$ d;
$YC_6 = 0.661797$ d;
$R_6 = 0.141988$ d;
$XC_7 = 0$;
$YC_7 = 0$;
$R_7 = 0.807550$ d;

where d is the distance between the axes of rotation of the two rotors.

4,455,133

EXTRUDER COATING DIE

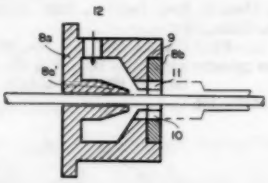
Willi Jakob, and Lothar Hornivius, both of Ehringshausen, Fed. Rep. of Germany, assignors to Küster + Co. GmbH, Ehringshausen, Fed. Rep. of Germany

Filed Jun. 1, 1982, Ser. No. 383,987

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1981, 3122744

Int. Cl.³ B29F *3/04, 3/10*

U.S. Cl. 425—113 **4 Claims**



1. An extruder coating die for depositing protective cushions on the plastic jackets of hoses, tubes or the like comprising:

(a) means for delivering said hoses, tubes or the like along an axis;

(b) means for delivering plastic materials in a path along said axis;

(c) a fixed die part located along said axis in said path of plastic material;

(d) a movable die part located along said axis in said path after said fixed die part having means for rotation about said axis from a first position to a second position;

(e) said fixed die part and said movable die part having ray-shaped inwardly extending arms with inside ends extending to said plastic jackets; and

(f) said arms of said movable die part having widths sufficient to bare free spaces between said arms of said fixed die part in said first position and cover said free spaces between said arms of said fixed die part in said second position.

4,455,134

THERMAL PRESSES

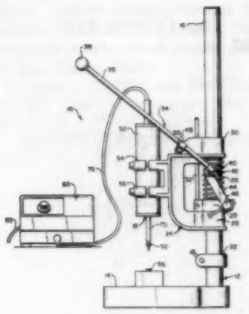
Gordon R. Biggs, Desborough, England, assignor to C.E.M. Co., Inc., Danielson, Conn.

Filed Aug. 1, 1983, Ser. No. 519,101

Claims priority, application United Kingdom, Aug. 4, 1982, 82 22548

Int. Cl.³ B29C *3/00, 17/00;* **B30B** *1/04*

U.S. Cl. 425—508 **12 Claims**



1. A thermal press for installing metal inserts into a workpiece of thermoplastics material and comprising a frame, a bit driver including a heating means and a housing supporting the heating means for relative reciprocation, the driver and housing mounted on the frame for reciprocation toward and away from the workpiece between a starting position remotely spaced relative to the workpiece and a ready operative position adjacent the workpiece, adjustment means on the frame for selectively establishing throw limit positions of the driver and housing in said starting and ready operative positions, the heating means including a bit adapted to be heated by the heating means, the bit being engageable with an insert upon movement of the driver from starting position to said ready operative position for applying heat directly to the insert causing it to locally melt the thermoplastics workpiece, and a bit biassing means for driving the bit from an insert engagement position to a fully extended position independently of the driver when movement of the driver is arrested in said ready operative position, thereby to apply an insert driving force on the bit to fully install the insert into the workpiece upon softening of its thermoplastics material, the housing having a stop member engageable with the heating means to establish the fully extended position of the bit under the driving influence of the biassing means.

4,455,135

VACUUM CHAMBER AND METHOD OF CREATING A VACUUM

Jack G. Bitterly, 4723 Vista De Oro Ave., Woodland Hills, Calif. 91367

Division of Ser. No. 220,004, Dec. 23, 1981, Pat. No. 4,389,794. This application Mar. 18, 1983, Ser. No. 476,632

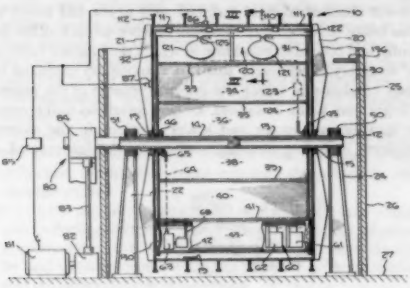
Int. Cl.³ F27B *5/04;* **C10G** *1/00;* **F26B** *13/30*

U.S. Cl. 432—1 **16 Claims**

16. A method of pyrolysis of hydrocarbon containing material comprising:

(a) loading a chamber with such material, the chamber having a cylindrical wall and end members closing the ends of the cylindrical wall to form a chamber;

(b) applying a vacuum to the inside of the chamber;
(c) rotating the chamber during application of the vacuum at



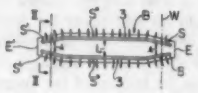
a speed such that centrifugal forces on the cylindrical wall counteract pressure forces acting on the chamber; and
(d) heating such material to pyrolysis temperature.

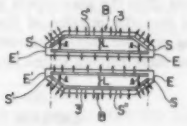
4,455,136

FLOATING EQUIPMENT AND FLOATING-TYPE HEAT TREATING FURNACE FOR STRIPLIKE WORKS

Masayuki Imose, Kawanishi; Takao Seno, Mino, and Yoshihito Sakaguchi, Kyoto, all of Japan, assignors to Chugai Ro Co., Ltd., Osaka, Japan

Filed Jun. 24, 1982, Ser. No. 391,704
Claims priority, application Japan, Jun. 29, 1984, 56-102162
Int. Cl.³ F27B *9/28*; F26B *13/20*
U.S. Cl. 432—59 **4 Claims**





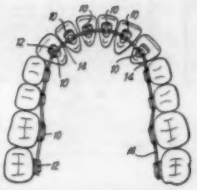
1. A pressure pad for directing jets or streams of fluid against a continuous strip of material adapted to travel along a work path generally parallel to a first axis of the pad, the pressure pad comprising:
(a) a first line of jet nozzles which includes a first one end portion, a first central portion, and a first other end portion,
(i) the first one end portion being disposed in a diverging relationship with the pad first axis from the inner terminal end of the first one end portion such that the outer terminal end thereof is spaced further from the pad first axis than the inner end,
(ii) the first other end portion being disposed in a diverging relationship with the pad first axis from the inner terminal end of the first other end portion such that the outer terminal end thereof is spaced further from the pad first axis than the inner end,
(iii) the first central portion extending between the first one end portion inner end and the first other end portion inner end;
(b) a second line of jet nozzles which includes a second one end portion, a second central portion, and a second other end portion,
(i) the second one end portion being disposed in a diverging relationship with the pad first axis from the inner terminal end of the second one end portion such that the outer terminal end thereof is spaced further from the pad first axis than the inner end,
(ii) the second other end portion being disposed in a diverging relationship with the pad first axis from the inner terminal end of the second other end portion such that the outer terminal end thereof is spaced further from the pad first axis than the inner end,
(iii) the second central portion extending between the second one end portion inner end and the second other end portion inner end;
(c) at least the first and second one end portions and other end portions being disposed to direct jets or streams of fluid emitting therefrom in such manner to strike said material strip passing adjacent thereto and exert outward force components thereon tending to stretch the strip.

4,455,137

DENTAL INSTRUMENT AND METHOD FOR POSITIONING A LINGUAL ORTHODONTIC BRACKET

Michael K. Diamond, 86 Milburn La., Roslyn, N.Y. 11577

Continuation-in-part of Ser. No. 322,193, Nov. 17, 1981. This application Sep. 27, 1982, Ser. No. 424,514
Int. Cl.³ A61C *7/00*
U.S. Cl. 433—3 **11 Claims**



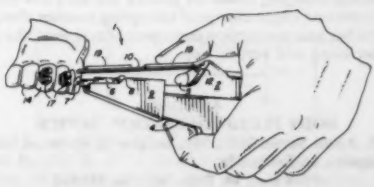
1. An instrument for positioning a lingual orthodontic bracket, said instrument comprising:
(a) a housing;
(b) a first arm extending from said housing and including means for releasably holding the orthodontic bracket;
(c) a second arm extending from said housing and including an end portion in opposition to said bracket holding means; and
(d) indicia means for indicating the relative position of a portion of said second arm with respect to a portion of said housing whereby the distance between said bracket holding means and said end portion of said second arm may be determined.

4,455,138

DENTAL BRACE BRACKET BONDING AND DEBRACKETING TOOL AND METHOD OF USE

John J. Sheridan, 1551 Calhoun St., New Orleans, La. 70118

Filed Sep. 30, 1982, Ser. No. 431,687
Int. Cl.³ A61C *7/00*
U.S. Cl. 433—3 **4 Claims**



1. A dental brace bracket bonding and debracketing tool comprising heating means and a heating element projecting from said heating means; an element tip extending from said

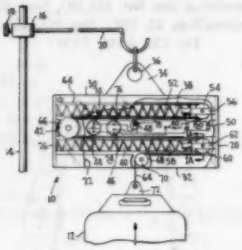
heating element and shaped to engage the groove in a dental brace bracket having projecting flanges; a resilient member shaped to define a pair of substantially parallel legs, each of said legs having one end secured to said heating means and the opposite end of said leg spaced by a retainer tip extending in close proximity to said element tip and shaped to engage the flanges on one side of the dental brace bracket; and bias means cooperating with said resilient member, whereby said opposite end of said retainer means can be urged into a selected distance from said element tip.

4,455,139

INTRAVENOUS LIQUID LEVELING DEVICE

Marvin Gordon, East Windsor; Joseph Lichtenstein, Colonia, and Stephen Kocanowski, Middlesex, all of N.J., assignors to Whitman Medical Corporation, Clark, N.J.

Filed Mar. 23, 1982, Ser. No. 360,994
Int. Cl.³ A61M *5/14*
U.S. Cl. 604—247 **19 Claims**



1. Apparatus for use in administering intravenous liquid from a container into a patient, which container is suspended from a level above the point of infusion, said liquid being delivered from the container throug a liquid flow path, said apparatus comprising:

a flexible elongated cord-like member for suspending said container for vertical movement along a vertical axis which is at least partially co-extensive with said cord-like member; and

resilient means engaged by said cord-like member for selectively diverting varying lengths of said cord-like member from said vertical axis to raise and lower said container as a function of the weight of said container and its liquid contents;

wherein said resilient means comprises:

at least one spring member engaged by said cord-like member so as to elastically vary the length of the spring member as a function of the weight of said container and its liquid contents;

chamber captively containing said spring member so as to restrict the direction of the elastic length variation of the spring member along a further axis which is skewed relative to said vertical axis, wherein said spring member is disposed along said further axis;

direction changing means for guiding said cord-like member to convert length change of said spring member along said further axis to a vertical movement of said cord-like member along said vertical axis.

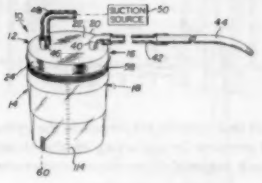
4,455,140

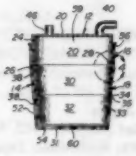
BODY FLUID COLLECTION DEVICE

Joel A. Joslin, Sunset Hills, Mo., assignor to Sherwood Medical Company, St. Louis, Mo.

Filed Dec. 18, 1981, Ser. No. 332,062
Int. Cl.³ A61M *1/00*
U.S. Cl. 604—317 **13 Claims**

1. A body fluid collection container assembly for fluid connection between a source of negative pressure and a source of fluid to be collected comprising a cover, a telescopically collapsible container including an upper portion including an upper member of rigid material, and a lower portion including a lower member of rigid material, said upper and lower portions being telescopingly movable relative to each other from a collapsed container condition in which the internal volume of the assembly is relatively small to a maximum extended container condition in which the internal volume of the assembly is larger than when collapsed, locking means on said container for locking said upper and lower portions in the extended condition including abutting surfaces at the juncture of said





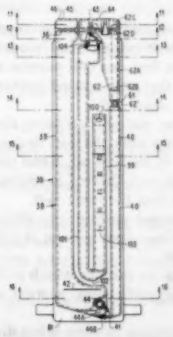
upper and lower portions when in the maximum extended container, fluid inlet means connected to said upper member for connecting a source of fluid with the interior of the assembly, suction outlet means on said cover for connecting the interior of the assembly with a source of negative pressure, and sealing means of flexible sheet material sealingly connected to said container for sealing the interior of the assembly against the flow of air from the atmosphere between said telescoping portions and into the interior of the assembly, said sealing means having portions thereof extending across said juncture to prevent air therethrough to the interior of the assembly.

4,455,141

DRAINAGE APPARATUS WITH VACUUM CONTROL

Edward P. Todd, 3145 Warren Wood Wynd, Lexington, Ky. 40502

Filed Jun. 8, 1982, Ser. No. 386,241
Int. Cl.³ A61M *1/00*
U.S. Cl. 604—319 **20 Claims**



1. A drainage apparatus including:

collection means having inlet means for communication with a pleural cavity of a body to receive fluids therefrom;

vacuum means to create a first selected negative pressure within said collection means to normally maintain the pleural cavity communicating with said inlet means at the first selected negative pressure, said vacuum means removing from said collection means gases of the fluids received in said collection means from the pleural cavity communicating with said inlet means of said collection means;

gas preventing return means between said collection means and said vacuum means to prevent return of gases to said collection means after being removed therefrom by said vacuum means;

and control means to control the negative pressure within said collection means to a second selected higher negative pressure above the first selected negative pressure created by said vacuum means when the negative pressure within said collection means is increased.

4,455,142

METHOD OF COADMINISTERING AN ANTIGEN AND AN IMMUNOPOTENTIATOR

Agusto B. Martins, and Alfred A. Amkraut, both of Palo Alto, Calif., assignors to Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 171,902, Jul. 7, 1980, abandoned, which is a continuation-in-part of Ser. No. 91,119, Nov. 5, 1979, abandoned. This application Jan. 11, 1982, Ser. No. 338,328

Int. Cl.³ A61M *13/00*

U.S. Cl. 604—890 **31 Claims**

1. A method for potentiating the immune response of an animal, which method comprises administering an antigen and an immunopotentiating agent at a controlled rate from a delivery system that maintains its physical and chemical integrity and limits the contact of the animal from the antigen and the immunopotentiating agent until they are administered simultaneously to the animal continuously in an immunological effective amount of at least 0.5 ng/hr of the antigen, and an immunopotentiating effective amount of at least 0.1 ng/hr of the immunopotentiating agent for a prolonged period of time of at least one day up to 380 days, thereby potentiating the immune response of the animal.

4,455,143

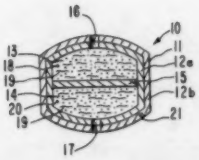
OSMOTIC DEVICE FOR DISPENSING TWO DIFFERENT MEDICATIONS

Felix Theeuwes, Los Altos; Brian Barclay, Menlo Park, and Richard Cortese, San Jose, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed Mar. 22, 1982, Ser. No. 360,396

Int. Cl.³ A61M *31/00*

U.S. Cl. 604—890 **38 Claims**



1. An osmotic therapeutic device for the controlled delivery of beneficial drugs to a biological environment, the device consisting essentially of:

(a) a wall formed of a semipermeable material permeable to the passage of an external fluid present in the environment and substantially impermeable to the passage of drug, the semipermeable wall surrounding and forming;

(b) a first compartment containing a drug formulation that exhibits an osmotic pressure gradient across the semipermeable wall against an external fluid;

(c) a second compartment containing a drug formulation that exhibits an osmotic pressure gradient across the semipermeable wall against an external fluid;

(d) a partition positioned between the first and second compartments, which partition is formed of a material selected from the group consisting essentially of semipermeable, microporous and impermeable materials;

(e) a first orifice in the wall communicating with the first compartment and the exterior of the device for delivering drug formulation from the first compartment to the environment over a prolonged period of time; and,

(f) a second orifice in the wall communicating with the second compartment and the exterior of the device for delivering drug formulation from the second compartment to the environment over a prolonged period of time.

4,455,144

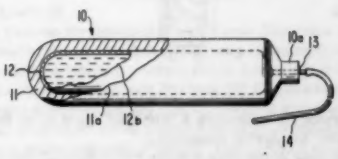
DISPENSER CONSTRUCTED WITH SEMIPERMEABLE POLYMER-HYDROPHILIC POLYMER WALL

Alan S. Michaels, San Francisco, Calif., assignor to ALZA Corporation, Palo Alto, Calif.

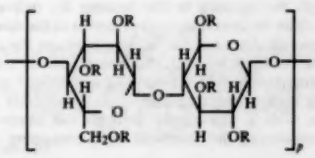
Continuation of Ser. No. 212,815, Dec. 4, 1980, abandoned. This application Sep. 27, 1982, Ser. No. 424,095

Int. Cl.³ A61M *7/00*

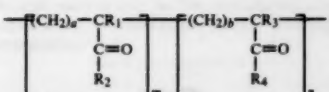
U.S. Cl. 604—892 **10 Claims**



1. A dispenser comprising: an outer wall formed of a semipermeable polymer onto which is grafted a hydrophilic polymer, the semi-permeable polymer comprising the general formula:



wherein R is a member selected from the group consisting of hydrogen, alkyl of 1 to 7 carbon atoms, acetyl, propionyl, butyryl, valeryl, pivaloyl, and the hydrophilic polymer comprising the general formula:



wherein R_1 and R_3 are a member selected from the group consisting of hydrogen, alkyl of 1 to 7 carbon atoms, and alkenyl of 2 to 4 carbon atoms, R_2 and R_4 are a member selected from the group consisting of hydroxyl, —O-alkali metal and NH_2, a is 1 to 4, b is 0 to 4, p is 30 to 100,000, m is 0 to 5000, n is 0 to 5000 with the total of m plus n at least 500, and at least

one of said R is the hydrophilic member, which wall surrounds and defines an internal space; a container for storing a member selected from the group consisting of a fluid and a beneficial agent in the internal space, the container formed of an elastomeric polymer that is changeable from a storing capacity to a substantially emptied capacity over time; an outlet passageway in the wall communicating with the container and the exterior of the dispenser for dispensing the stored member over time; and wherein when the dispenser is in operation in the environment of use, the dispenser releases the beneficial member in response to the wall admitting and absorbing fluid from the environment and expanding, thereby exerting pressure on the container which collapses under the pressure and ejects the member through the passageway from the dispenser over time.

4,455,145

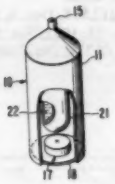
DISPENSING DEVICE WITH INTERNAL DRIVE

Felix Theeuwes, Los Altos, Calif., assignor to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 281,952, Jul. 10, 1981, Pat. No. 4,410,328. This application Jun. 24, 1983, Ser. No. 507,330

Int. Cl.³ A61M *31/00*

U.S. Cl. 604—892 **1 Claim**



1. A device for delivering a beneficial agent to an environment of use, the device comprising:

(a) a housing comprising a shape retaining wall that defines an internal space said housing having at its top an opening that connects the space with the exterior of the housing, and at its bottom a retaining member that lets an exterior fluid enter the housing;

(b) a container in the housing, said container comprising a flexible wall surrounding a reservoir for storing a beneficial agent, said container having a passageway that passes through the opening in the housing for delivering the agent from the container to the exterior of the device; and,

(c) an osmotic device in the housing between the container and the retaining member, the osmotic device comprising a semipermeable wall surrounding a beneficial agent containing compartment containing an osmotically effective solute, with a passageway through the semipermeable wall connecting the beneficial agent containing compartment with the exterior of the osmotic device and the bottom of the flexible container; and,

(d) wherein in operation, agent is delivered by (e) external fluid being imbibed through the semipermeable wall into the compartment of the osmotic device to (f) form a solution containing the osmotic solute that is (g) dispensed from the osmotic device and fills the space between the container and said device, thereby (h) urging the container to continuously collapse and dispense agent through the opening to the environment of use.

4,455,146

NOVEL PLASTERS

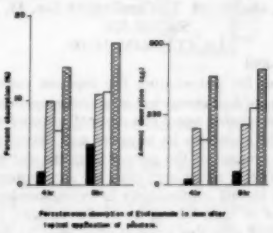
Kanji Noda, Chikushino; Akira Nakagawa, Tosu; Tetsuya Yamagata, Tosu; Masasi Kobayasi, Tosu; Tadayoshi Suenaga, Mine; Fumiaki Tokubuchi, Tosu; Kazuki Noguchi, Ogohri; Tadaaki Yoshitake; Masayoshi Tsuji, both of Tosu, and Hiroyuki Ide, Fukuoka, all of Japan, assignors to Hisamitsu Pharmaceutical Co., Ltd., Saga, Japan

Continuation-in-part of Ser. No. 123,616, Feb. 22, 1980, abandoned. This application Mar. 2, 1982, Ser. No. 354,114

Claims priority, application Japan, Apr. 3, 1979, 54-40787; Apr. 19, 1979, 54-49263

Int. Cl.³ A61F *7/02*

U.S. Cl. 604—897 **11 Claims**



1. A plaster containing a composition comprising by weight, 100 parts of a thermoplastic elastomer selected from the group consisting of styrene-isoprene-styrene block copolymers, styrene-isoprene-styrene radial block copolymers, styrene-butadiene-styrene block copolymers, styrene-butadiene-styrene radial block copolymers and mixtures thereof, 25–370 parts of a member selected from the group consisting of oils and high fatty acids which are a solvent for the diolefinic block, not for the monoolefinic block, to provide gel-like properties to said plaster, 25–200 parts of a tack-providing resin and 0.09–110 parts of a medicinal ingredient uniformly distributed in said plaster.

4,455,147

TRANSFER PRINTING

David M. Lewis, Otley, England; Peter R. Brady, Highton, Australia; Peter G. Cookson, Belmont, Australia, and Keith W. Fincher, East Geelong, Australia, assignors to I.W.S. Nominee Company, Limited, London, England and Commonwealth Scientific and Industrial Research Organization, Canberra, Australia

Continuation of Ser. No. 057,015, Jul. 12, 1979, abandoned. This application Mar. 26, 1981, Ser. No. 247,790

Claims priority, application Australia, Oct. 9, 1978, PD6308

Int. Cl.³ D06P *1/16, 1/62, 1/653, 1/667*

U.S. Cl. 8—471 8 Claims

1. A method of coloring a textile material containing natural fiber with enhanced color yield consisting of the steps of:

applying to said material a solution consisting of at least one anionic or cationic surface active agent effective to enhance the color yield in subsequent coloring and a solvent for said surface active agent and drying said material to leave deposited thereon from 1 to 10% by weight, based on the weight of the textile, of said at least one surface active agent;

applying a sublimable dye to said textile material in the dry condition in the presence of said at least one surface active agent;

and subjecting said textile material bearing said dye and said at least one surface active agent to heat thereby fixing said dye on said textile material; wherein,

said anionic or cationic surface active agent is an organic compound consisting of a polar group and a non-polar group, said non-polar group consisting of a straight chain, branched chain, ring chain or unsaturated alkyl group containing from one to twenty carbon atoms, and said polar group consisting of (1) an anionic group selected from the group consisting of carboxylate, sulfate, thiosulfate, sulfonate, sulfinate, sulfamate, phosphate, pyrophosphate and phosphonite, or (2) a cationic group selected from the group consisting of protonated primary, secondary and tertiary amine groups and quaternary ammonium, pyridium, picolinium, imidazole, benzimidazole, tertiary oxonium, tertiary sulfonium and quaternary phosphonium groups.

4,455,148

METHOD FOR DE-ASHING AND TRANSPORTATION OF COAL

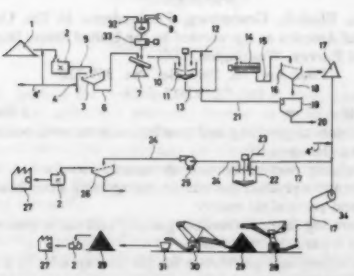
Kenichi Nagata, Yachiyo; Shigeru Nagamori, Ichihara; Yuuichi Katoh, Ichihara; Katsumi Satoh, Ichihara, and Takashi Yano, Ichihara, all of Japan, assignors to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, Japan

Filed Apr. 9, 1982, Ser. No. 366,996

Claims priority, application Japan, Apr. 9, 1981, 56-52421

Int. Cl.³ C10L *5/16*

U.S. Cl. 44—1 SR 14 Claims



4. A method of de-ashing and transporting coal comprising the steps of:

(1) crushing coal and separating the resulting crushed coal into finer pulverized coal particles and larger crushed coal particles,

(2) dry mixing the separated pulverized coal particles with a hydrocarbonaceous binder to cover the surfaces of the particles with the binder,

(3) adding water to the binder-covered pulverized coal to form an aqueous solution of coal particles,

(4) stirring the slurry, so as to disperse ash particles from the pulverized coal into the water and to agglomerate coal particles in the pulverized coal by tumbling, thereby forming pelletized coal,

(5) separating ash particles from the pelletized coal,

(6) separating the separated pelletized coal by gravity separation into high ash pelletized coal and pure pelletized coal,

(7) mixing the separated pure pelletized coal with the larger crushed coal particles obtained in the step (1), and

(8) transporting the resulting mixture.

4,455,149

PROCESS FOR THE PRODUCTION OF FUEL COMPOSITIONS

Takeo Satake, Wakayama; Masahisa Ishigami, Hyogo; Kunio Arimoto, Hyogo; Yorishige Matsuba, Hyogo; Yoshikazu Inoue, Hyogo; Yusuke Tanaka, Tokyo, and Kohei Kanda, Chiba, all of Japan, assignors to Maruzen Oil Co., Ltd. and Nippon Chemtec Consulting Inc., both of Osaka, Japan

Filed Aug. 14, 1981, Ser. No. 292,980

Claims priority, application Japan, Apr. 16, 1981, 56-58293

Int. Cl.³ C10L *1/32*

U.S. Cl. 44—51 21 Claims

1. A process for producing a w/o type dispersion composition suitable for use as a fuel, comprising kneading (a) a bituminous substance which is a semi-solid or heavy liquid substance having a viscosity of at least 20 cSt at 50° C., (b) a low molecular weight aliphatic alcohol, and (c) water, a water-containing organic compound, or an aqueous organic compound suspension, said water-containing organic compound and said aqueous organic compound suspension being a mixture of fine solid organic compound particles or liquid organic compound particles and water, said kneading being performed at a temperature ranging between about 0° C. and 65° C., to provide a w/o type dispersion composition wherein the aqueous alcohol solution as a dispersed phase is dispersed in the bituminous substance as an continuous phase.

4,455,150

CHEMICALLY ENHANCED COMBUSTION OF WATER-SLURRY FUELS

Kenneth R. Olen, 800 Elwood Ave., Port St. Lucie, Fla. 33452

Filed Aug. 18, 1983, Ser. No. 524,341

Int. Cl.³ C10L *1/32*

U.S. Cl. 44—51 10 Claims

6. An essentially 80 to 65% coal/20 to 35% water composition suitable for secondary dispersion in a combustion composition containing about 100 to 5,000 ppm of a water-soluble explosive selected from at least one member of a group consisting of picric acid; alkali picrates, such as ammonium picrate, sodium picrate, potassium picrate, calcium picrate; and heavy metal picrates, such as iron picrate, lead picrate, zinc picrate; triaminoguanidine, nitroaminoguanidine, diethylguanidine, and nitroguanidine.

4,455,151

VAPOR INJECTION FUEL COMPOSITION

James M. Ashmore, 820 Milwood Rd., Broken Arrow, Okla. 74012

Filed Oct. 25, 1982, Ser. No. 436,598

Int. Cl.³ C10L *1/18*

U.S. Cl. 44—53 6 Claims

1. A vapor injection fuel additive comprising: for every

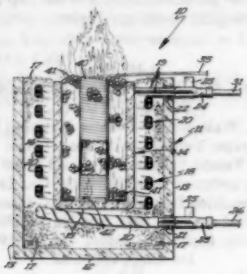
forty-seven parts by volume of acetone; about one part by volume of a branched C_6H_{14} hydrocarbon, from about eight to about forty parts by volume of nitromethane, from about three hundred fifty to about five hundred fifty parts by volume of an alcohol selected from the group consisting of methanol, ethanol and isopropanol, and up to about four hundred sixty parts by volume of water.

4,455,152

HYDROGEN GENERATOR

Jess R. Hansen, P.O. Box 20517, Portland, Oreg. 97220

Filed Feb. 22, 1983, Ser. No. 468,852
Int. Cl.³ B01J 7/00
U.S. Cl. 48—61 **4 Claims**



1. A hydrogen generator, comprising:

a housing formed of a heat resistant material; an open-topped crucible formed of a heat resistant material and positioned interiorly of said housing, said crucible containing particulate ferrous oxide;

an induction coil formed of metallic tubing and positioned around the outside of said crucible, said coil having an inlet end portion connected to a source of water, and having an outlet end portion through which waste gases are exhausted;

means electrically connected with said induction coil and to a source of electrical current whereby when electrical current flows through the induction coils, the latter will be heated to heat the water contained therein to a temperature sufficient to decompose the water into gaseous hydrogen and oxygen;

a generator coil formed of stainless steel tubing and positioned within said crucible, said generator coil having an inlet end portion connected in communicating relation with said induction coil adjacent the outlet end portion thereof for receiving therethrough gases produced by the decomposition of water, said generator coil having an outlet end portion located interiorly of and adjacent the bottom of said crucible through which gaseous hydrogen and oxygen are discharged to flow upwardly through the particulate ferrous oxide whereby the gaseous oxygen will react with the ferrous oxide and the gaseous hydrogen may be ignited as it is discharged through the open upper end of the crucible.

4,455,153

APPARATUS FOR STORING SOLAR ENERGY IN SYNTHETIC FUELS

Douglas Y. Jakahi, 94-037 Huo Pl., Mililani Town, Hi. 96786

Continuation-in-part of Ser. No. 903,074, May 5, 1978, abandoned. This application Sep. 4, 1979, Ser. No. 71,983
Int. Cl.³ C10J 3/20
U.S. Cl. 48—62 R **1 Claim**

1. Apparatus for storing solar energy in synthetic fuel, comprising:

a reactor vessel having a solar radiation pervious window in its upper surface and containing a gasification medium;

directing means for directing solar radiation through said window and onto said gasification medium to raise the temperature of said gasification medium to a temperature at which carbonaceous material and steam react to produce gaseous product;

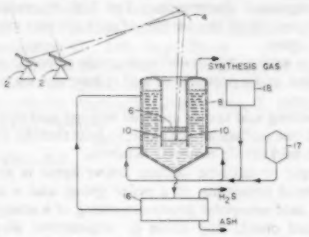
a supply vessel containing carbonaceous material;

a steam generator;

means for transferring steam and carbonaceous material from said steam generator and said supply vessel into the gasification medium in said reactor vessel;

purifying means for removing byproducts of the reaction of said steam and said carbonaceous material from said gasification medium;

means for transferring gasification medium from said reactor vessel to said purifying means;



means for transferring purified gasification medium from said purifying means to said reactor vessel; and

means for withdrawing gaseous product from said reactor vessel;

said reactor vessel being provided with partition means depending from the upper portion of the reactor vessel and surrounding said window, said partition means defining with the portion of said reactor vessel lying above said gasification medium an annular chamber defining with said window a central chamber, said partition means extending into said gasification medium and defining below the surface thereof an opening into said central chamber, and said means for transferring steam and carbonaceous material into said reactor vessel passing into said annular chamber at a point above said opening into said central chamber, whereby said window is protected from said molten gasification medium by a body of gaseous reaction product in the upper part of said central chamber.

4,455,154

HEAT EXCHANGER FOR COAL GASIFICATION PROCESS

George A. Blasiole, Greensburg, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 16, 1982, Ser. No. 369,720
Int. Cl.³ C01J 3/68
U.S. Cl. 48—77 **2 Claims**

2. A process of gasifying and treating carbonaceous material, comprising the steps of:

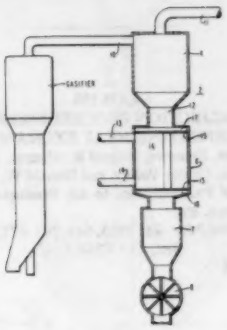
(1) gasifying said carbonaceous material to form a solid waste and a product gas mixture comprising a combustible gas and particulate matter;

(2) separating said combustible gas and said particulate matter in a particle separator;

(3) conveying said particulate matter into an inlet in a heat exchanger;

(4) flowing said particulate matter downwardly by gravity through said heat exchanger through a cavity formed between a first tube and an axially extending core member disposed within said first tube;

(5) flowing a cooling fluid through said heat exchanger, said cooling fluid being in indirect heat exchange relationship and separated from said particulate matter but in direct heat exchange relationship with said first tube; and



(6) flowing said particulate matter through valve means, said valve means inhibiting flow of said combustible gas through said heat exchanger.

4,455,155

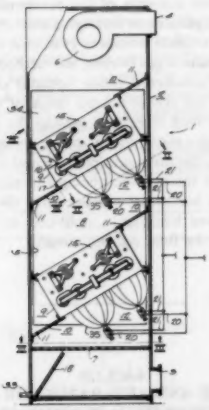
ELECTROSTATIC COLLECTING ASSEMBLY

James E. Wooldridge, and Karl L. Westlin, both of Louisville, Ky., assignors to Allis-Chalmers Corp., Milwaukee, Wis.

Filed Jul. 30, 1982, Ser. No. 403,783

Int. Cl.³ B03C *3/74*

U.S. Cl. 55—13 **10 Claims**



1. A method for periodically coating the electrodes of an electrostatic collecting assembly having an atomizing nozzle adapted to direct a spray of treating liquid containing oil onto the electrodes while continuing gas cleaning operations within the collecting assembly, comprising the sequential steps of:

continuously flowing gas through the electrostatic collecting assembly,

directing a stream of pressurized air through the nozzle;

injecting a stream of treating liquid containing oil into the nozzle after the air stream has been flowing through the nozzle for a first preselected time so the liquid is entrained in the air stream in atomized small uniform droplets and sprayed onto the electrodes by the nozzle;

stopping the flow of treating liquid containing oil into the nozzle while maintaining the flow of air through the nozzle for a second preselected time after stopping the flow of treating liquid into the nozzle; and

stopping the flow of air through the nozzle.

4,455,156

PROCESS FOR IMPROVING THE GAS SEPARATION IN LIQUID/GAS REACTORS

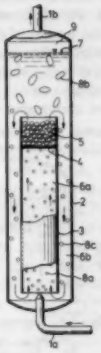
Wolfgang Ramspeck, Oberursel, and Wolfgang Sittig, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 2, 1980, Ser. No. 183,448

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1979, 2935639

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—52 **3 Claims**



1. A process for improving the coalescence and separation of fine gas bubbles of a liquid-gas mixture in a liquid-gas reactor, comprising introducing a gas into the mixture at a lower portion thereof so that the liquid-gas mixture rises at a liquid speed as a liquid-gas current; and passing the liquid-gas current upward through a layer of solid particles in said current to form a fluidized bed, the density of the fluidized bed being greater than that of the liquid-gas mixture; wherein the said solid particles have a density of 0.5 to 13 g/cm³ and a nominal size of 0.1 to 100 mm; with the size, density, and shape thereof being selected so that the particles have a sedimentation velocity which is higher than said liquid speed, and so that said liquid speed is higher than that necessary for their fluidization

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4,455,157

ABSORBER FOR DEHYDRATING GAS

Joseph D. Honerkamp, and Harold O. Ebeling, both of Tulsa, Okla., assignors to Latoka Engineering, Inc., Tulsa, Okla.

Continuation-in-part of Ser. No. 227,998, Jan. 23, 1981, Pat. No. 4,375,977. This application Sep. 22, 1982, Ser. No. 421,568

Int. Cl.³ B01D *53/20*

U.S. Cl. 55—234 **4 Claims**

1. An absorber for contacting gas having water entrained therein with liquid desiccant comprising:

an upright vessel having a gas inlet and a liquid desiccant inlet both being intermediate the vessel top and bottom, a gas outlet adjacent the top and a liquid desiccant outlet adjacent the bottom;

a horizontal plate separating the interior of the vessel into an upper and a lower chamber, the plate having a plurality of openings therein;

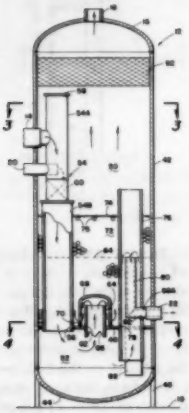
a vertical mixing conduit within said vessel connecting at its upper end with said gas inlet and said desiccant inlet and passing downwardly through an opening in said plate, into said lower chamber, the vertical mixing conduit having a

lower portion and an upper portion, the upper portion receiving said gas and desiccant inlets and the lower portion being of an increased internal diameter whereby the velocity of flow therethrough is diminished to reduce agitation of liquid desiccant in said vessel lower chamber as the gas passes from the vertical mixing conduit into said lower chamber;

a short length vertical cylindrical member supported in each said opening in said plate, the lower end of each extending above said plate;

a cap covering the upper portion of each said cylindrical members, the internal diameter of the caps being greater than the external diameter of the cylindrical members, the caps having passageways therein below the upper ends of the cylindrical members whereby gas flowing upwardly through said cylindrical members flows downwardly in the annular area between the exterior of the cylindrical members and the interior of the caps and out the cap passageways, said vessel liquid desiccant outlet being arranged to maintain a pool of desiccant having a level in said vessel substantially above said cap passageways, said vessel desiccant inlet being above the desiccant level;

packing means within said vessel extending from said plate upwardly to a level above said desiccant pool level;



a vertical discharge conduit within said vessel having an open top and bottom, the conduit being received in an opening in said plate, the bottom of the conduit terminating within said vessel lower chamber above the vessel bottom and the upper end terminating within said vessel upper chamber above said packing;

a vertical pipe positioned concentrically within said desiccant discharge conduit of external diameter less than the internal diameter of said desiccant discharge conduit, the upper open end being below the upper end of the desiccant discharge conduit, the desiccant discharge conduit having an opening in the sidewall thereof;

a horizontal pipe received in said opening in said desiccant discharge conduit, the horizontal pipe being connected at its inner end to the lower end of said vertical pipe and the other end being connected to said vessel desiccant outlet; and

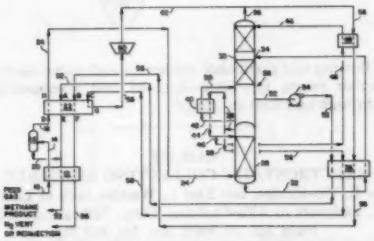
whereby gas and liquid desiccant entering said vessel flow downwardly and are mixed in said mixing conduit into said lower chamber, the gas flows upwardly through said plurality of cylindrical members and through said pool of desiccant and out through said cap passageways, thence upwardly through said packing to said gas outlet, and whereby liquid rises from said lower chamber into said vertical discharge chamber and to the level of the upper end of said vertical pipe to thereby equalize pressures with said vessel upper and lower portion, the liquid flowing out through said vertical and horizontal pipes and said vessel desiccant outlet.

4,455,158

NITROGEN REJECTION PROCESS INCORPORATING A SERPENTINE HEAT EXCHANGER

Harvey L. Vines, Emmaus; Miguel R. Alvarez, Allentown; Howard C. Rowles, Center Valley, and Donald W. Woodward, New Tripoli, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 21, 1983, Ser. No. 477,561
Int. Cl.³ F25J *1/02*
U.S. Cl. 62—28 **15 Claims**



1. In a process for cooling a multicomponent gas stream containing variable amounts of the components which comprises passing the gas stream through a heat exchange relationship with a fluid coolant stream to condense at least a portion of the multicomponent gas stream, the method for maintaining carry-up of the condensed phase without condensed phase backmixing over the compositional range of the multicomponent gas stream which comprises passing the multicomponent gas stream through a serpentine pathway comprising a series of horizontal passes, the cross-sectional area of at least one horizontal pass nearer the cold-end being less than the cross-sectional area of the horizontal passes nearer the warm-end, the serpentine pathway being in a cold-end up heat exchange relationship with the fluid coolant stream.

4,455,159

METHOD OF AND APPARATUS FOR COATING OPTICAL FIBER WITH PLASTICS MATERIAL

John G. Lamb, Harlow, and Malcolm D. Mackay, Old Harlow, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

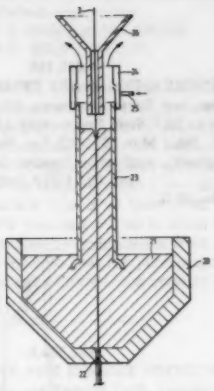
Filed Sep. 1, 1982, Ser. No. 413,860
Int. Cl.³ C03C *25/02*
U.S. Cl. 65—3.11 **13 Claims**

1. A method of providing an optical fiber with a coating of plastics material, comprising the steps of

advancing the optical fiber longitudinally thereof and downwardly into a body of a liquid precursor of the plastics material;

subjecting a region of the upper surface of the body around the point of entry of the optical fiber into the body to a pressure reduced below that applied to the remainder of the upper surface of the body;

withdrawing the optical fiber with a layer of the plastics material precursor thereon from the body; and



effecting curing of the material precursor of the layer into the plastics material.

4,455,160

TRANSPARENT GLASS-CERAMICS ESPECIALLY SUITABLE FOR USE AS STOVE WINDOWS

Hermann L. Rittler, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 20, 1982, Ser. No. 451,282
Int. Cl.³ C03C *21/00*
U.S. Cl. 65—30.13 **4 Claims**

1. A method for making a window or other component for a coal or wood burning stove, which window or other component is exposed to the atmosphere generated by the combustion of wood or coal in said stove, said window or other component being made from a transparent glass-ceramic body containing β-quartz solid solution as the predominant crystal phase, which method comprises the steps of:

(a) melting a batch for a glass selected from the group consisting, expressed in terms of weight percent on the oxide basis, of

	Group A	Group B
SiO_2	65–75	67–70
Li_2O	1–4	2.5–3.5
MgO	1–4	1.5–3.5
Al_2O_3	15–25	17.75–20
ZnO	0.5–2.0	1–2
Na_2O and/or K_2O	0.1–2.0	—
TiO_2	3–6	2–4.5
F	0.1–1.2	—
ZrO_2	—	1–2
BaO	—	0–2

with alkali metal oxides other than Li_2O, alkaline earth metal oxides other than MgO and BaO, and B_2O_3 being essentially absent from the Group B compositions;

(b) cooling said melt to a temperature below the transformation range thereof and simultaneously shaping a glass body of a desired configuration therefrom;

(c) heating said glass body to a temperature selected from the group of 750°–850° C. for a glass having a composition within Group A and 850°–950° C. for a glass having a composition within Group B for a sufficient length of time to crystallize the glass article in situ to a glass-ceramic article containing β-quartz solid solution as the predominant crystal phase;

(d) contacting said glass-ceramic body with a source of potassium ions at a temperature between 400°–800° C. for a sufficient length of time to cause the replacement of Li^+ ions in the β-quartz solid solution crystals in the surface of the article with K^+ ions to a depth of at least 10 microns to thereby provide a transparent body which is resistant to attack from the atmosphere containing steam, SO_2, and/or SO_3 generated in a coal or wood burning stove; and p1 (e) exposing said transparent body to said atmosphere generated by said combustion of wood or coal.

4,455,161

TRACE ELEMENT FERTILIZER COMPOSITION

Michael A. Cohen, Bexley, and Luther A. Elrich, Raymond, both of Ohio, assignors to The O.M. Scott & Sons Company, Marysville, Ohio

Filed Sep. 13, 1982, Ser. No. 417,528
Int. Cl.³ C05F *11/02*
U.S. Cl. 71—24 **5 Claims**

1. A slow release particulate trace element fertilizer composition in granular form comprising a homogeneous mixture of trace elements and calcium sulfate,

each of the particles of said composition comprising a granular mixture of one part by weight of plant nutrient trace elements and from two to five parts by weight of calcium sulfate,

said nutrient trace elements being metallic compounds in the form of salts or oxides which provide for the slow release to the media of the metals iron, manganese, zinc and copper, said metals being present in an amount of from 2.5 to 5.5% of iron and from 1.3 to 2.7% each of manganese, zinc and copper, the ratio of iron to manganese being from two to one to four to one, said percentages being the percent by weight of the metallic trace element in said compounds based upon the total weight of the composition,

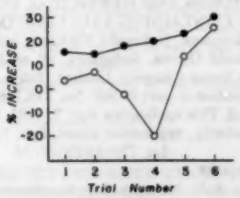
said particulate carrier comprising calcium sulfate.

4,455,162

1-TRIACONTANOL PLANT GROWTH STIMULATOR FORMULATIONS

Andrew J. Welebir, Arlington, Va., assignor to Biochemical Research Corporation, Falls Church, Va.

Continuation-in-part of Ser. No. 202,705, Oct. 30, 1980, Pat. No. 4,411,685, which is a continuation-in-part of Ser. No. 146,005, May 2, 1980, Pat. No. 4,333,758, which is a continuation-in-part of Ser. No. 047,696, Jun. 12, 1979, abandoned. This application Nov. 24, 1981, Ser. No. 324,416
The portion of the term of this patent subsequent to Jun. 8, 1999, has been disclaimed.
Int. Cl.³ A01N *59/00*
U.S. Cl. 71—80 **30 Claims**



Formulation 1=○ Formulation 2=●

1. A plant growth stimulator formulation, comprising:

an effective plant growth-stimulating amount of 1-triacontanol;

a polar organic solvent which is soluble in water, and in which 1-triacontanol is soluble;

metal ions having a valence of +2 to +5, said metal ions being present in an amount effective to increase the plant growth-stimulating effects of said formulation; and

water.

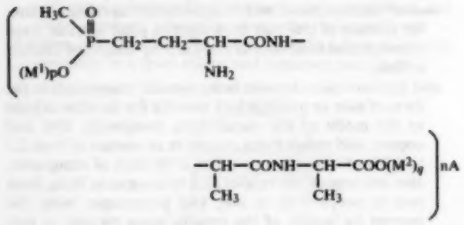
4,455,163
HERBICIDAL COMPOSITIONS AND HERBICIDAL PROCESSES

Tetsuo Takematsu; Makoto Konnai, both of Utsunomiya; Kunitaka Tachibana, Yokohama; Takashi Tsuruoka, Kawasaki; Shigeharu Inouye, and Tetsuro Watanabe, both of Yokohama, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Division of Ser. No. 959,838, Nov. 13, 1978, Pat. No. 4,309,208. This application May 15, 1981, Ser. No. 263,454
Claims priority, application Japan, Mar. 9, 1978, 53-25971
Int. Cl.³ A01N *57/00, 37/38*
U.S. Cl. 71—86 **8 Claims**

1. A composition for severely damaging or killing unwanted herbaceous and woody plants, consisting essentially of a herbicidally effective amount of a mixture of:

(A) SF-1293 substance or an SF-1293 substance salt of the formula:



wherein M^1 and M^2 are each hydrogen or a cation selected from the group consisting of sodium, potassium, lithium, copper, magnesium, calcium, zinc, nickel, manganese, and ammonium which is unsubstituted or substituted by 1–4 lower alkyl, hydroxy lower alkyl, or lower alkenyl; A is an inorganic or organic acid selected from the group consisting of hydrochloric, sulfuric, hydrobromic, phosphoric, perchloric, nitric, acetic, propionic, citric, tartaric, monochloroacetic, trichloroacetic, and trifluoroacetic acids; n is 0, 0.5 or 1; p is the inverse number of the valency of M^1; and q is the inverse number of the valency of M^2; and

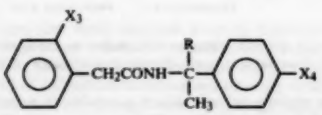
(B) 2,4-dichlorophenoxyacetic acid or its alkali metal salt, the weight ratio of (A):(B) being about 1:3 to 3:1.

4,455,164
N-(α,α-DIALKYLBENZYL)-PHENYLACETAMIDE COMPOUNDS AND HERBICIDAL COMPOSITIONS CONTAINING SAID COMPOUNDS

Tetsuo Takematsu; Nobuyuki Kikkawa, both of Utsunomiya, and Hideaki Ogawa, Sodegaura, all of Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 118,746, Feb. 5, 1980, abandoned. This application Apr. 7, 1982, Ser. No. 366,141
Claims priority, application Japan, Feb. 7, 1979, 54-12211
Int. Cl.³ A01N *37/18*
U.S. Cl. 71—118 **8 Claims**

1. N-(α,α-dialkylbenzyl)-phenylacetamide compounds having the general formula



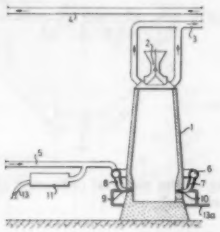
wherein each of X_3 and X_4 is a chlorine atom or a bromine atom, and R is a methyl group or an ethyl group.

7. A herbicidal composition comprising (i) a herbicidal carrier, and (ii) a herbicidally effective amount of at least one compound as defined in claim 1.

4,455,165
INCREASING BLAST TEMPERATURE

Sven Santén, and Börje Johansson, Hofors, both of Sweden, assignors to SKF Steel Engineering AB, Sweden

Filed May 25, 1983, Ser. No. 497,853
Claims priority, application Sweden, Jun. 9, 1982, 8203563
Int. Cl.³ C21B *5/00*
U.S. Cl. 75—10 R **5 Claims**

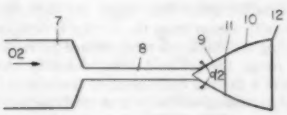


1. In a method of supplying heated blast gas to a shaft furnace containing metal or metal oxide so as to melt or reduce said metal or metal oxide, said method including the steps of heating at least a portion of said blast gas by means of a plasma generator and thereafter injecting said heated blast gas into said shaft furnace by means of tuyeres communicating with the interior of the furnace, the improvement comprising selecting a blast gas such that substantially no nitrogen oxide will be permitted to contact the tuyeres and further selecting said blast gas such that it is inert or oxidizing toward the metal to be melted or reduced and such that the product of the mol fractions or oxygen and nitrogen in the heated blast gas is less than or equal to 0.02.

4,455,166
NOZZLE FOR AN OXYGEN INJECTION LANCE FOR DECARBURIZATION OF PIG IRON AND USE FOR THE DECARBURIZATION OF CHROMIUM CONTAINING PIG IRON

Jean Brancaz, Venthon Albertville, and Georges Marizy, Ugine, both of France, assignors to Ugine Aciers, Paris, France

Filed Aug. 14, 1981, Ser. No. 292,818
Claims priority, application France, Aug. 26, 1980, 80 18846
Int. Cl.³ C21C *5/32*
U.S. Cl. 75—60 **7 Claims**



1. A supersonic oxygen jet nozzle having inlet and outlet portions, said outlet portion having a frustoconical divergent outlet having an apex angle of between 60° and 70° and said divergent outlet comprising means for establishing a supersonic substantially turbulent oxygen jet for effecting formation of a gas-molten pig iron emulsion.

4,455,167

NICKEL-ZINC DUST-IRON-NICKEL POWDER PIGMENT SYSTEM

Donald H. Osborn, Suffern, N.Y., assignor to MPD Technology Corporation, Wyckoff, N.J.

Filed Jul. 5, 1983, Ser. No. 510,595
Int. Cl.³ B22F 1/10, 1/02
U.S. Cl. 75—255 5 Claims

1. A pigment system for electronic and electromagnetic shielding coatings including in percent by weight about 30% to about 70% of a nickel powder produced by decomposition of nickel carbonyl under conditions to provide a powder having a chain-like structure of irregularly shaped particles with an average particle size in the range of about 2 to 4 micrometers (μm) and a specific surface area of at least about 0.5 m^2/g, about 20% to about 60% zinc dust and up to about 40% of an iron-nickel powder produced by codeposition from nickel and iron carbonyl with the proviso that the percentage of nickel powder plus the percentage of nickel-iron powder must be in excess of about 45%.

4,455,168

AQUEOUS INK FOR INK-JET PRINTING

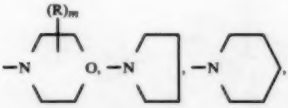
Masaru Shimada, Tagata, and Tadashi Fujii, Yokohama, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

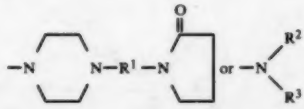
Filed Dec. 27, 1982, Ser. No. 453,548
Claims priority, application Japan, Jan. 5, 1982, 57-000055; Jan. 21, 1982, 57-006787; Jan. 21, 1982, 57-006788
Int. Cl.³ C09D 11/02
U.S. Cl. 106—22 16 Claims

1. An aqueous ink for ink-jet printing comprising:
a water-soluble dye;
water; and
a compound selected from the group consisting of (a) the compounds of formula (I)

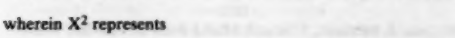
(I)

wherein X^1 represents



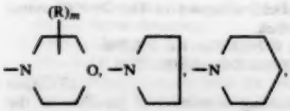


in which R, R^1, R^2 and R^3 independently represent an alkyl group with 1 to 4 carbon atoms or a hydroxyalkyl group with 1 to 4 carbon atoms, and m is an integer of 0 to 2; and at least one of the two Y's is a hydroxyl group, and when one Y, but not both Y's, is a hydroxyl group, the Y that is not a hydroxyl group is the same as X^1 and (b) compounds of the formula (II):



(II)

wherein X^2 represents



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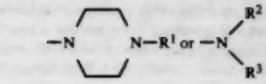


in which R, R^1, R^2 and R^3 independently represent an alkyl group with 1 to 4 carbon atoms or a hydroxyalkyl group with 1 to 4 carbon atoms, m is an integer of 0 to 2, and n is an integer of 1 to 6.

4,455,169

SALT WATER CEMENT SLURRIES AND WATER LOSS REDUCING ADDITIVES THEREFOR

Jiten Chatterji, and Bobby G. Brake, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 167,936, Jul. 14, 1980, abandoned. This application Apr. 26, 1982, Ser. No. 371,848
Int. Cl.³ C04B 7/353
U.S. Cl. 106—93 12 Claims

1. A cementing composition useful in cementing oil and gas wells and the like consisting essentially of:
water;
cement;
salt in an amount above about 18% by weight of said water;
carboxymethylhydroxyethylcellulose having a carboxymethyl D.S. in the range of from about 0.1 to about 0.7, an ethylene oxide M.S. in the range of from about 0.6 to about 2.8 and a molecular weight such that a 1% by weight aqueous solution thereof at a temperature of 78° F. has a viscosity in the range of from about 10 to about 225 centipoises measured on a FANN viscometer at 300 rpm using a No. 1 spring; and
a hydroxycarboxy acid selected from the group consisting of gluconic acid, tartaric acid, lactic acid, citric acid, malic acid and mixtures of such acids.

4,455,170

METHOD OF UPGRADING ROCK AND TREATED ROCK OBTAINED THEREFROM

Donald G. LeGrand, Burnt Hills, and George M. Banino, Rexford, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 16, 1983, Ser. No. 475,795
Int. Cl.³ C04B 31/42, 31/44
U.S. Cl. 106—97 16 Claims

1. A method for upgrading rock having an average diameter of at least ¼" which comprises,
(1) wetting the rock with an aqueous mixture of polyelectrolyte and polyglycol having at least 1% by weight of polyelectrolyte and form and from 1 to 10 parts, per part of the polyelectrolyte of the polyglycol,
(2) allowing or effecting the drying of the resulting treated rock.

4,455,171

REACTIVATABLE SET-INHIBITED CEMENTITIOUS COMPOSITIONS

Robert H. Spensley, Swanwick, and John Ellis, Ashfield, both of England, assignors to Societe Anonyme d'Explosifs et de Produits Chimiques, Paris, France

Filed Dec. 6, 1982, Ser. No. 447,392
Claims priority, application United Kingdom, Dec. 9, 1981, 8137139
Int. Cl.³ C04B 7/32, 7/35
U.S. Cl. 106—104 9 Claims

1. A method of producing a hardened high alumina cement grouting composition which comprises forming a set- inhibited aqueous high alumina cement grouting composition essentially comprising high alumina cement, water and a set-inhibiting

agent selected from boric acid and gluconic acid delta lactone, and thereafter, when the grouting composition is required for use, incorporating in the set- inhibited aqueous high alumina cement grouting composition a reactivator composition comprising a reactivator which will cause the grouting composition to set rapidly to a high strength hardened cementitious composition.

4,455,172

WATERPROOFING COMPOSITION FOR THE BULK TREATMENT OF PLASTER OR A PLASTER-BASED PRODUCT AND CORRESPONDING METHOD

Francois M. Kerserho, Champigny, France, assignor to Societe pour le Developpement de la Recherche Industrielle "SODRI", Paris, France

Filed Mar. 9, 1982, Ser. No. 356,514

Claims priority, application France, Jun. 5, 1981, 81 11230

Int. Cl.³ C09K *3/10;* **C04B** *11/00, 11/22*

U.S. Cl. 106—109 **10 Claims**

1. A water proofing composition for incorporation in the mixing water of plaster or a plaster-base product, said composition comprising the composition formed by mixing together:

about 0.5 to about 5% by weight of at least one silane of the general formula $R_xSi(OR')_n$, in which formula R and R' are independently a lower alkyl radical having 1 to 4 carbon atoms or a phenyl radical, in which x and n are integers or x is zero, the sum of x and n

about 10% to about 20% by weight of a fatty acid salt which forms a dispersion, and

about 60% to about 90% water.

4,455,173

PREPARATION OF PIGMENTARY FORM OF QUINACRIDONE PIGMENTS

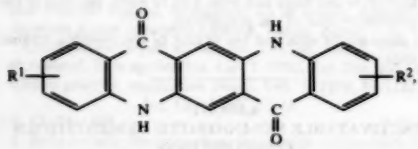
Edward E. Jaffe, Wilmington, Del., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

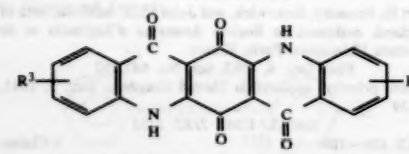
Continuation-in-part of Ser. No. 281,194, Jul. 7, 1981, abandoned. This application Apr. 16, 1982, Ser. No. 368,321

Int. Cl.³ C09B *48/00*

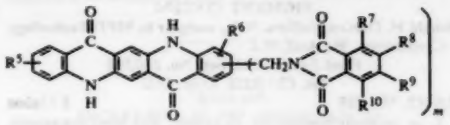
U.S. Cl. 106—288 Q **11 Claims**

1. A process of preparing pigmentary grade quinacridone from crude quinacridone consisting essentially of a quinacridone or mixture of quinacridones of the formula





and mixtures thereof, with 0 to 75 weight percent of unsubstituted quinacridone and 0 to 15 wt. % of a quinacridone of the formula



where R^1, and R^2 are fluorine, chlorine, bromine, methyl or methoxy; R^7, R^9, and R^{10} are hydrogen or chlorine; R^3, R^4, R^5, and R^6 are hydrogen, fluorine, chlorine, bromine, methyl, or methoxy; and R^8 is hydrogen, chlorine, bromine, nitro, alkyl groups of 1 to 5 carbon atoms, alkoxy groups of 1 or 2 carbon atoms or benzoylamino, and m is an integer of from 1 to 4 by converting the crude quinacridone to a low crystallinity aggregated form, followed by milling the low crystallinity quinacridone in a water miscible organic liquid which is effective in improving the crystallinity of quinacridone particles containing up to an equal amount of water present in an amount sufficient to give a fluid slurry and recovering a pigmentary product.

4,455,174

YELLOW PIGMENT CONTAINING BISMUTH VANADATE AND HAVING THE COMPOSITION $BiVO_4.xBi_2MoO_6.yBi_2WO_6$

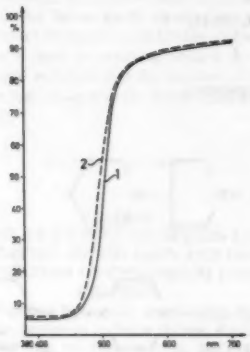
Henning Wienand, Hockenheim; Werner Ostertag, Gruenstadt, and Knut Bittler, Speyer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 26, 1982, Ser. No. 411,864

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1981, 3135281

Int. Cl.³ C09C *1/00*

U.S. Cl. 156—288 B **1 Claim**



1. A yellow pigment which contains bismuth vandate and has the composition $BiVO_4.\times Bi_2MoO_6.y\ Bi_2WO_6$ where x is from 0.6 to 2.25 and y is from 0 to 0.1.

4,455,175

METHOD FOR REMOVING OR RETARDING PARAFFIN BUILDUP ON SURFACES IN CONTACT WITH CRUDE OIL

William J. Settineri, Midland, Mich.; John G. Charles, Westerville, Ohio; Jerald J. Hinkel, Houston, Tex., and Bradley P. Malone, Kalkaska, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 1, 1983, Ser. No. 518,896

Int. Cl.³ B08B *7/04;* **E21B** *37/06*

U.S. Cl. 134—5 **13 Claims**

1. A method for retarding deposition of paraffins on the

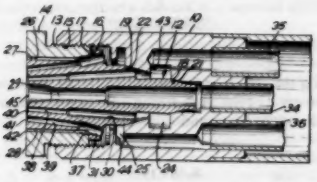
surfaces of equipment in contact with crude oils containing such paraffins which comprises contacting the surface with a sulfur trioxide-containing fluid and thereafter rinsing the surface.

4,455,176

POST-MIXED OXY-FUEL GAS CUTTING TORCH AND NOZZLE AND METHOD OF OXY-FUEL GAS CUTTING

Ronald E. Fuhrhop, West Nyack, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed May 17, 1983, Ser. No. 495,166
Int. Cl.³ B23K *7/00*
U.S. Cl. 148—9 R **7 Claims**



5. A method of oxy-fuel gas cutting using a cutting torch having a torch head and nozzle assembly for mixing fuel gas and oxygen external of the torch comprising the steps of supplying a cutting stream of oxygen through a central opening extending through said nozzle assembly; discharging fuel gas from said nozzle assembly through a first set of discharge orifices surrounding said central opening; discharging oxygen from said nozzle assembly through a second set of discharge orifices to form a first preheat annular stream of oxygen about said fuel gas stream and discharging oxygen from another gas discharge orifice to form a second preheat annular stream of oxygen surrounding said first preheat annular stream of oxygen with said first preheat annular stream being fed through said second set of discharge orifices at an angle of between 2 to 20 degrees relative to the longitudinal axis of the cutting torch so as to impinge said fuel gas stream very close to the point of discharge from said nozzle assembly.

4,455,177

METHOD AND APPARATUS FOR CHEMICAL HEAT TREATMENT OF STEEL PARTS UTILIZING A CONTINUOUS ELECTRIC FURNACE

Vladimir I. Filippov, ulitsa Marxistskaya, 5, kv. 226; Nikolai I. Parshin, ulitsa Zelenodolskaya, 14, korpus 2, kv. 16; Igor V. Barabanov, prospekt Budennogo, 28, korpus 1, kv. 8; Eduard N. Marmer, Novolesnaya ulitsa, 17 "A", kv. 48; Alexandr F. Puzanov, Bolshoi Fakelny pereulok, 3, kv. 26; Alexandr B. Lobanov, ulitsa Zelenodolskaya, 14, korpus 2, kv. 21; Jury P. Usaty, ulitsa Tashkentskaya, 4, korpus 2, kv. 143; Vladimir I. Gerasimov, ulitsa Zelenodolskaya, 14, korpus 2, kv. 12, all of Moscow; Arkady K. Tikhonov, ulitsa Dzerzhinskogo, 69, kv. 228, and Viktor N. Turulin, ulitsa Dzerzhinskogo, 72, kv. 82, both of Tolyatti, all of U.S.S.R.

Filed Sep. 13, 1982, Ser. No. 417,553
Int. Cl.³ C21D *1/74, 9/67*
U.S. Cl. 148—155 **8 Claims**

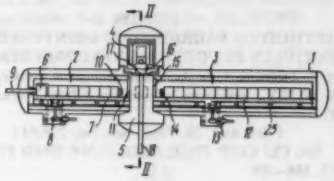
1. A continuous furnace for chemical heat treatment of parts, comprising:

a heating chamber for heating said parts, a first hearth situated in said heating chamber to support said parts in said heating chamber, with the parts arranged in succession in a linear direction, said first hearth being mounted for reciprocal motion in a path which is substantially parallel to said linear direction;

a cooling chamber for cooling said parts, a second hearth situated in said cooling chamber to support said parts in said cooling chamber with the parts arranged in succession in said linear direction, said second hearth being mounted for reciprocal motion in a path which is substantially parallel to said linear direction;

a processing chamber for chemical heat treatment of said parts;

support means disposed between said heating and cooling chambers for movement between a first position wherein said support means is adapted to receive and support at least a leading one of said parts from said heating chamber and a second position wherein said at least one supported part is situated in said processing chamber;



stop means installed in said heating and cooling chambers for restraining movement of the parts with respect to the respective hearths supporting the same when said first and second hearths are moved in directions towards each other to an intermediate position;

heat screens installed in said heating and cooling chambers on the sides of said support means; and

means associated with said support means for sealing said processing chamber when said support means is in said second position.

4,455,178

CASTABLE SMOKE GENERATING PYROTECHNIC COMPOSITION AND PROCESS FOR ITS PREPARATION

Georges Sédat, Saint-Raphael, France, assignor to Etat Francais represente par le Delegue General pour l'Armement, Paris, France

Filed Jul. 11, 1983, Ser. No. 512,524
Claims priority, application France, Jul. 28, 1983, 82 13157
Int. Cl.³ C06B *45/10*
U.S. Cl. 149—19.6 **13 Claims**

1. A smoke generating pyrotechnic composition which comprises an oxidizing agent—reducing agent system, a sublimable organic dye and a carbazate cooling agent of the general formula

$$R-O-\overset{\overset{O}{\|}}{C}-NH-NH_2$$

in which R represents a straight-chained or branched alkyl group comprising from 1 to 5 carbon atoms, which composition includes a binder.

4,455,179

METHOD FOR THE PREPARATION OF MAGNETICALLY TRACEABLE EXPLOSIVES

Tadashi Yamaguchi; Takayuki Ono; Michitoshi Hirata, and Toshihiko Yokoyama, all of Sendai, Japan, assignors to Tohoku Metal Industries, Ltd., Sendai and Taisei Corporation, Tokyo, both of, Japan

Filed Oct. 26, 1981, Ser. No. 315,136
Claims priority, application Japan, Nov. 11, 1980, 55-158427; Nov. 11, 1980, 55-158428; Apr. 17, 1981, 56-57934
Int. Cl.³ C06B *43/00*
U.S. Cl. 149—109.6 **10 Claims**

1. A method for the preparation of a magnetically traceable

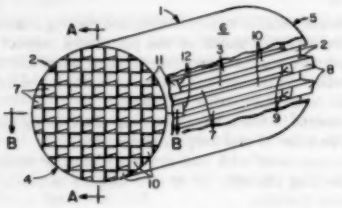
explosive which comprises removing free alkalinity or acidity from the surface of particles of magnetic ferrite powder to bring the powder to a neutral condition on the surface of the particles thereof to such an extent that water in which the ferrite powder is suspended has a value of pH in the range from 5.0 to 9.0, and blending the ferrite powder with an explosive.

4,455,180

METHOD OF FABRICATING A SINTERED AND SELECTIVELY PLUGGED HONEYCOMB STRUCTURE

Arthur E. Hillman, Campbell, and Robert J. Paisley, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Aug. 24, 1981, Ser. No. 295,612
Int. Cl.[3] **C03B** *29/00;* **C04B** *35/64;* **B01D** *39/20*
U.S. Cl. 156—89 **11 Claims**



1. A method of fabricating a sintered and selectively plugged honeycomb structure comprising the steps of:

providing a green honeycomb structure having a multiplicity of hollow, open-ended cells extending therethrough and formed of a first sinterable material;

providing plugs in at least one open end portion of a plurality of said multiplicity of cells, the plugs being formed of a second material which undergoes, with respect to the honeycomb structure as a result of drying and sintering the plugged honeycomb structure, a relative linear expansion sufficiently great to fill and block the cell ends and sufficiently small to prevent fracturing of the cells; and

substantially sintering said plugged structure whereby said plugs fill and block said end portions of said plurality of cells.

4,455,181

METHOD OF TRANSFER LAMINATION OF COPPER THIN SHEETS AND FILMS

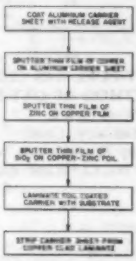
Eric Lifshin, Loudonville; Joseph D. Cargioli, Schenectady; Stephen J. Schroder, Schenectady, and Joe Wong, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 189,003, Sep. 22, 1980, Pat. No. 4,383,003. This application Feb. 22, 1983, Ser. No. 468,097
Int. Cl.[3] **B32B** *15/20;* **B44C** *1/14;* **B05C** *1/36;* **B21D** *39/00*
U.S. Cl. 156—150 **16 Claims**

1. The method of making a copper-clad laminate which comprises:

vapor depositing on a copper body of less than about 80-microns thickness an ultra-thin film of zinc;

vapor depositing an ultra-thin film of an oxide selected from the group consisting of silicon dioxide and aluminum oxide on the resulting ultra-thin zinc film; and


COAT ALUMINUM CARRIER SHEET WITH RELEASE AGENT
SPUTTER THIN FILM OF COPPER ON ALUMINUM CARRIER SHEET
SPUTTER THIN FILM OF ZINC ON COPPER FILM
SPUTTER THIN FILM OF SiO_2 ON COPPER-ZINC FOIL
LAMINATE FOIL COATED CARRIER WITH SUBSTRATE
STRIP CARRIER SHEET FROM COPPER CLAD LAMINATE

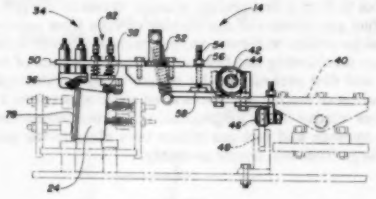
laminating the resulting coated copper body with a substrate so as to create relatively strong adhesion between the said coated copper body and said substrate.

4,455,182

TAPERED ARTICLE LABELLING MACHINE MODIFICATION ASSEMBLY AND LABEL APPLICATION METHOD

William F. Roth, and Nevin Snyder, both of Hanover, Pa., assignors to New Way Packaging Machinery, Inc., Hanover, Pa.

Filed Sep. 16, 1983, Ser. No. 532,914
Int. Cl.[3] **B29C** *17/04;* **B61C** *9/04*
U.S. Cl. 156—215 **5 Claims**



1. A tapered article labelling machine modification assembly adapted to be installed upon a tapered article labelling machine of a type having an infeed end and a delivery end interconnected by an arcuate tapered article guide track and provided with a radial arm conveyor assembly having a plurality of like radial arm members for progressively engaging and axially rotating therewith a successive stream of tapered articles along said guide track, said modification assembly comprising in combination:

a. a spring tensioned bifurcated arm means for each of said radial arm members of said plurality comprising said radial arm conveyor assembly,

b. an improved adhesive application station having a plurality of longitudinally extending progressively laterally displaced adhesive wheel means in turn laterally positioned within said tapered article guide track therealong intermediate said infeed end and said delivery end and adapted to apply to the external circumferential sidewall surface respectively of each tapered article in the succession comprising said stream a longitudinally extending progressively lateral displaced adhesive application pattern corresponding to said application wheel disposition array,

c. a laterally spaced set of tapered article register guide means assembled along said guide track in arcuate displaced spaced disposition relative to the delivery end of said adhesive application station and adapted to receivably direct therefrom said tapered articles of said succes-

sion respectively in circumferentially rotational passage therethrough and in lateral sidewall label wrap registered angular alignment therewith coincidental to continued rotational passage respectively thereof to a label pick-up station, and

d. a guidance track assembly having an arcuate groove track adapted to rotationally receive in respective succession the head bead of a labeled tapered article said groove track being arcuately parallel in laterally spaced disposition to an arcuate tail guide rail adapted to cooperatively guide therewith the lower circumferential contact surface of a tapered article and having a longitudinally extending conformably arcuate seaming pad supportably disposed therebetween for maintaining close lateral sidewall wrap register of an applied label during close conformable affixment respectively thereof to a tapered article circumferential exterior sidewall surface.

5. A method of labelling curved and tapered articles, said method comprising first conveyably engaging and sequentially spacing apart respectively in axial rotation displacement circumferentially about the curved surface thereof along an arcuately configured guide track individual curved and tapered articles from a like successive contiguously abutted sidewall disposed stream of the same delivered thereto, second accelerating each of said sequentially spaced apart individual curved and tapered articles to a constant high-speed close density axially rotated circumferential displacement forwarding along said arcuately configured guide track, next applying a longitudinally displaced laterally offset metered film pattern of adhesive material to the external circumferential sidewall surface of each of said constantly high-speed close density axially rotated curved and tapered articles during continued forwarding displacement respectively thereof through a tapered article-to-label lateral wrap register orientation guide means disposed along said arcuately configured guide track followed by axially rotational engagement and adhered external circumferential sidewall surface incrementally progressive wrapping of a label upon said curved and tapered article in progressive lateral wrap register therewith by means of said metered film pattern of adhesive material previously applied thereto, and respective close conforming pressing of said applied label to the circumferential exterior sidewall surface of said tapered article.

4,455,183
PRODUCING POKERWORK DESIGNS ON WOOD SUBSTRATES

George Suchomel, 1416 Rometown Dr., Mississauga, Ontario, Canada (L5E 2T4)

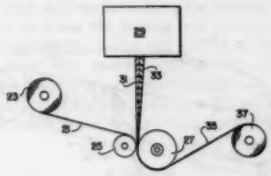
Continuation of Ser. No. 089,987, Oct. 31, 1979, abandoned, which is a continuation of Ser. No. 937,576, Aug. 28, 1978, abandoned. This application Oct. 26, 1981, Ser. No. 315,215
Claims priority, application Canada, Nov. 10, 1977, 260609
Int. Cl.³ B27M *1/06*
U.S. Cl. 156—219 4 Claims

1. A method of producing a pictorial design upon a wood veneer comprising the steps of: laminating one surface of the veneer onto a continuous thin substrate of paper, fabric or foil having a thickness of not more than about 0.002 inch to form a laminate having a combined thickness of about 0.015 inch to about 0.020 inch, impressing the other surface of the veneer with a desired pictorial design in a press having a printing plate bearing the design in relief and mounted on and in close thermal contact with a bed of substantial thermal capacity heated to a temperature above the carbonization temperature of the wood, locally carbonizing the one surface of the veneer in the locations in which it is impressed in intaglio with the design on the plate, and simultaneously holding a cold platen of high and uniform thermal conductivity in uninterrupted close thermal contact with the surface of said substrate opposite said printing plate to set up a temperature gradient in the laminate sufficient to limit the maximum impression of said design into the veneer.

4,455,184
PRODUCTION OF LAMINATE POLYESTER AND PAPERBOARD

Kenneth P. Thompson, Canton, N.C., assignor to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 185,777, Sep. 10, 1980, abandoned. This application Feb. 18, 1983, Ser. No. 467,930
Int. Cl.³ B32B *31/30*
U.S. Cl. 156—244.11 7 Claims



1. A process for forming a laminate of paperboard and polyester for use in the preparation of ovenable containers capable of being used in a hot environment which comprises coextruding:

(A) a first molten layer comprising a polyethylene terephthalate resin; and

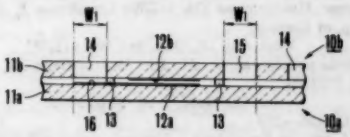
(B) a second molten layer comprising an extrudable polymeric adhesive comprising an ethylene methylacrylate copolymer which adheres both to the polyethylene terephthalate resin and to paperboard;

onto a paperboard substrate in a single step to form a polyethylene terephthalate resin/paperboard laminate, said first layer comprising the outer layer.

4,455,185
METHOD OF MANUFACTURING LIQUID CRYSTAL DISPLAY ELEMENT

Ken Sasaki; Sigeru Matsuyama; Tsunehiro Yoshino, all of Mobara, and Katuhiro Miyazaki, Chiba, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 7, 1982, Ser. No. 415,572
Claims priority, application Japan, Sep. 9, 1981, 56-140988
Int. Cl.³ B32B *31/18*; G09F *9/00*
U.S. Cl. 156—250 8 Claims



1. A method of manufacturing liquid crystal display elements by a multi-element manufacturing process comprising the steps of putting together two substrates of plastic film provided with electrodes in individual element sections such that the electrodes on these plastic films are in register with one another, sealing liquid crystal in a space between the substrates which is defined in respect of the individual element sections by seal members in the form of a closed configuration, and cutting said substrates to obtain individual liquid crystal display elements separated from one another, wherein one of

said substrates is formed with cuts which penetrate the substrate through its thickness in the neighborhood of the outer wall of said seal members before bringing said substrates together for bonding.

4,455,186

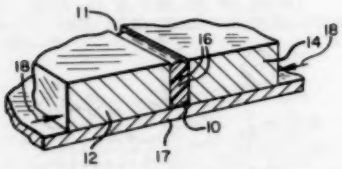
SELF-CONTAINED EXOTHERMIC APPLICATOR AND PROCESS

Paul L. Koehmstedt, Richland, Wash., assignor to Battelle Memorial Institute, Richland, Wash.

Continuation-in-part of Ser. No. 489,006, Apr. 27, 1983, abandoned, which is a continuation-in-part of Ser. No. 929,120, Jul. 28, 1978, abandoned. This application Sep. 26, 1983, Ser. No. 535,580

Int. Cl.³ B32B *31/00*

U.S. Cl. 156—273.9 **29 Claims**



1. A process for joining together two objects in the substantial absence of a reactive atmosphere comprising:

in the substantial absence of a reactive atmosphere, conducting an exothermic reaction within an adhesive mass by subjecting said mass to activation energy, said mass comprising at least one reactant which reacts in the absence of a reactive atmosphere to produce heat when subjected to sufficient said activation energy and an adhesive material which acquires adhesive characteristics when heated and which is flowable between said objects during said reaction;

said reaction being conducted in such a manner that there is less than total gasification of said mass and sufficient heat is delivered to said adhesive material to give it said adhesive characteristics and that adhesive material flows between and in contact with said objects;

allowing said adhesive to cool between and in contact with said objects.

4,455,187

FILTER SHEET MATERIAL AND METHOD OF MAKING SAME

Hubert von Blücher, Freytagstrasse 45; Hasso von Blücher, Sohnstrasse 58, both of D-4000 Düsseldorf, and Ernst de Ruiter, Hobënstrasse 57a, D-5090 Leverkusen 3, all of Fed. Rep. of Germany

Filed Aug. 26, 1982, Ser. No. 411,737

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1982, 3211322

Int. Cl.³ B41C *1/06*; B32B *31/20*

U.S. Cl. 156—277 **13 Claims**

1. A process for making a filter sheet material which comprises mixing a paste of a powdered absorbent having a particle size of about 0.1 to 50 μm with a solution or dispersion of a polymeric binding agent comprising at least one member selected from the group consisting of polyurethanes, polyacrylates, halogenated or halogen-free elastomers, fusible polyamides, fusible polyesters and fusible ethylenevinyl acetate copolymers thereby to form a composition, printing the composition on at least one surface of a porous textile sheet material in discrete areas to a height of about 0.05 to 1 mm and a width of about 0.1 to 5 mm, the discrete areas covering up to about 90% of the surface with unprinted areas separating the discrete printed areas, the powdered absorbent being applied in about 20 to 250 g/m² and the polymeric agent being present in about 20 to 200% of the weight of the adsorbent, and drying the textile sheet material, the resulting filter sheet material having an air permeability under a 10 mm water column of about 50 to 5000 liters per square meter per second.

4,455,188

AUTOMATIC APPARATUS FOR APPLYING COVER-SLIPS ON SLIDES

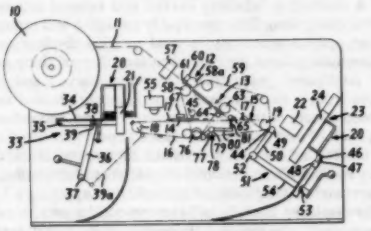
Nils G. I. Stormby, Fridhemsvägen, Malmö, Sweden

Filed Nov. 8, 1982, Ser. No. 439,720

Claims priority, application Sweden, Dec. 1, 1981, 8107162

Int. Cl.³ B26D *5/00*

U.S. Cl. 156—355 **4 Claims**



1. In apparatus for applying cover-slips on slides for specimens and the like, the combination of slide conveyor means for advancing slides past a coating station to a cover-slip application station; cassette means having means for supporting a plurality of slides in stacked relation therein; slide ejection mechanism including ejector means reciprocable in timed relation to the advancement of said conveyor means for feeding slides successively from said cassette means to said conveyor means for advancement thereby; means actuated by said ejector means for effecting stepwise movement of said cassette means to bring each slide therein successively into registry with said ejector means for movement thereby onto said conveyor means; slide coating means at said coating station; photosensitive means disposed to generate a characteristic signal when a slide is present at a given location on said conveyor means; means responsive to said signal for actuating said coating means to deposit a quantity of coating material on each slide as it is advanced by said conveyor means; means responsive to the presence of a slide at said given location for advancing a strip of cover-slip material past a severing station to said application station, said cover-slip advancing means comprising a pair of cooperating rollers forming a nip through which said cover-slip strip is adapted to pass, one of said rollers being driven in timed relation to the advancement of said conveyor means, and the other roller having a portion of reduced radius, an eccentric weight on said other roller, stop means retaining said other roller against movement with the portion of reduced radius thereof facing said one roller so that said strip is not advanced while said stop means retains said weight against movement; second means responsive to said signal for withdrawing said stop means to permit said other roller to rotate under the influence of the weight thereon to advance a specified length of said strip towards the application station to form a cover-slip; severing means at said severing station operative in timed relation to the advance of said conveyor means for severing a specified length of cover-slip material as the free end thereof arrives at the application station; nip roller means at the application station for pressing the severed cover-slip material against a slide at said station; means operated in timed relation to the advance of said conveyor means for advancing said severed cover-slip material to said nip roller means in substantial registry with the slide against which it is pressed;

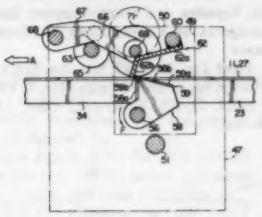
and means for receiving from said application station slides with cover-slips thereon.

4,455,189

SHEET JOINING APPARATUS

Yutaka Takasuga, Kodaira, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Jul. 8, 1983, Ser. No. 511,895
Int. Cl.³ B65H *69/02, 69/06*
U.S. Cl. 156—502 **9 Claims**



1. A sheet joining apparatus for joining a plurality of sheet segments to one another to form an elongated strip which is lengthwise composed of the sheet segments, comprising

an elongated frame structure having rearmost and foremost ends and defining therein a front conveyance zone extending forwardly from the rearmost end of the frame structure, a rear conveyance zone extending rearwardly from the foremost end of the frame structure and an intermediate joining zone extending between the rear and front conveyance zones;

first sheet conveying means operative to convey each of said sheet segments forwardly away from the rearmost end of said rear conveyance zone to said joining zone;

second sheet conveying means operative to convey a strip formed in said joining zone forwardly from said joining zone toward the foremost end of said front conveyance zone;

the first and second conveying means overlapping each other in said joining zone transversely of said frame structure and forming a horizontal transfer plane in said joining zone;

first edge-adjusting means provided in said joining zone and comprising a plurality of pressing surfaces which are arranged in alignment with each other on a vertical plane directed at a predetermined angle to a transverse direction of said frame structure and which are angularly movable about an axis fixed with respect to said frame structure and parallel with said vertical plane each between a generally vertical first angular position lower than said transfer plane and a second angular position higher than said transfer plane, and a plurality of upper ride-on surfaces which are arranged in parallel with said vertical plane and which are angularly movable with said pressing surfaces about said axis each between a first angular position lower than said transfer plane and a forwardly and upwardly slanting second angular position having its foremost end located above said transfer plane and its rearmost end located below said transfer plane, the pressing surfaces in the second angular positions thereof being engageable with the trailing edge of said strip for forcing a trailing end portion of the strip forwardly in said joining zone and thereby causing the trailing edge of the strip to extend in parallel with said vertical plane when said strip is located immediately in front of the pressing surfaces, and the ride-on surfaces in the second angular positions thereof being operative to guide a leading end portion of a sheet segment to slide on the ride-on surfaces to a angular position vertically overlapping the trailing end portion of the strip formed in said joining zone;

second edge-adjusting means comprising a plurality of downwardly directed edge portions which are positioned above said ride-on surfaces and which are arranged in parallel with said vertical plane, the edge portions being angularly movable about an axis fixed with respect to said frame structure and parallel with said vertical plane each between a first angular position having its lowermost end located on a predetermined horizontal plane above said transfer plane, a second angular position having its lower end located below said predetermined horizontal plane and above said transfer plane and a third angular position having its lowermost end located on said transfer plane, the edge portions in the second angular positions thereof being engageable with the leading edge of a sheet segment forwardly conveyed into said joining zone by said first conveying means for causing the leading edge of the segment to extend in parallel with said vertical plane; and

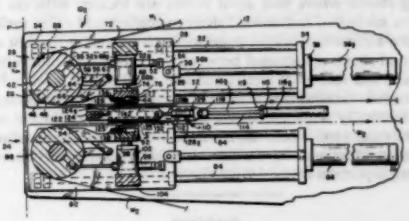
pressing means provided in said joining zone and arranged in parallel with said vertical plane, the pressing means being operative to press the leading end portion of the sheet segment against the trailing end portion of said strip in said joining zone after said ride-on surfaces are withdrawn from said second angular positions to said first angular positions thereof with the leading end portion of the sheet segment lapped onto the trailing end portion of said strip.

4,455,190

WEB SPLICER

Peter E. Bianchetto, Foxboro, and John H. Frohock, Brockton, both of Mass., assignors to Butler Automatic Inc., Canton, Mass.

Filed Apr. 20, 1983, Ser. No. 495,301
Int. Cl.³ B65H *19/14, 19/18*
U.S. Cl. 156—504 **8 Claims**



1. Web splicing apparatus of the type having a splicer head for splicing the leading edge of a ready web to a second web and wherein the carriage includes a frame characterized in that the splicer head has a pair of opposing carriage assemblies movably mounted to the frame for movement along parallel tracks between advanced positions adjacent to the front of the splicer head and retracted positions, each carriage assembly comprising an idler roller for receiving web from a web roll mounted on the splicer, a nip bar positioned parallel to the idler roller, means for swingably mounting the nip bar to the carriage so that the bar is swingable between a ready position wherein the bar is located downstream from the corresponding idler roller and a web preparation position at the front of the splicer head when the opposite nip bar carriage is in its retracted position and nip bar actuating means for shifting the bar from its ready position toward the nip bar on the opposite carriage, a knife carriage assembly movably mounted to the frame, said knife carriage assembly being movable parallel to the nip bar carriages between an advanced position and a retracted position, knife means supported by the knife carriage assembly and movable between a retracted position wherein the knife means is positioned between and just forwardly of said ready nip bars and an advanced position wherein the knife means intercepts one of said nip bars when that bar is in its splicing position, means mounted on the knife carriage assem-

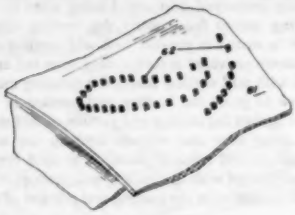
bly for momentarily urging the knife means from its retracted to its advanced position, and means for controlling the movements of said carriages, nip bars and knife means between their various operative positions.

4,455,191

CLOTH WELDING ANVIL

Harold E. Tatum, Sr, 4605 St. Rita Dr., Louisville, Ky. 40219

Filed May 18, 1983, Ser. No. 440,955
Int. Cl.³ B29C 27/08
U.S. Cl. 156—580.2 6 Claims



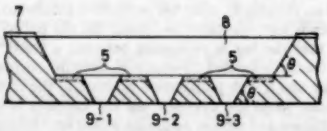
1. Anvil means carried on the peripheral surface of cylindrical drum means which is rotatable about its longitudinal axis for use in ultrasonic welding together of first and second thermoplastic sheets where the inner surfaces of said first and second sheets are in contact; ultrasonic vibration transmitting means having a working surface in contact with the outer surface of said first sheet so that upon rotation of said drum means said anvil means are periodically located in opposed, aligned, spaced relation with said ultrasonic vibration transmitting means where said anvil means are located adjacent the outer surface of said second sheet to contact said outer surface of the second sheet as the drum means is rotated so the first and second sheets are located between said ultrasonic transmitting means and said anvil means and said anvil means is heated by ultrasonic transmission from said ultrasonic transmitting means to thermally weld the sheets together in areas adjacent said anvil means and where the anvil means are of elongate, tubular configuration, and have a slit extending longitudinally thereof along a portion of the length thereof.

4,455,192

FORMATION OF A MULTI-NOZZLE INK JET

Masayoshi Tamai, Kanagawa, Japan, assignor to Fuji Xerox Company, Ltd., Tokyo, Japan

Filed Apr. 5, 1982, Ser. No. 365,923
Claims priority, application Japan, May 7, 1981, 56-68802
Int. Cl.³ H01L 21/308
U.S. Cl. 156—628 6 Claims



1. A method for the formation of a multi-nozzle ink jet, comprising the steps of:

masking the surface of a single crystal silicon plate;

diffusing impurities onto the unmasked regions of said plate to render said unmasked regions resistant to known etching compositions;

growing a second single crystal silicon plate onto said first single crystal silicon plate;

masking the surface of said second single crystal silicon plate; and

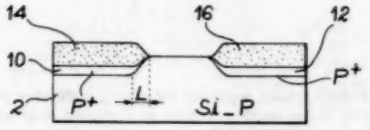
diffusing an etching composition onto said masked second single crystal silicon plate, whereby said etching composition creates an opening in said second single crystal silicon plate, and creates a plurality of nozzles in said first single crystal silicon plate.

4,455,193

PROCESS FOR PRODUCING THE FIELD OXIDE OF AN INTEGRATED CIRCUIT

Pierre Jeuch, Seyssins, and Pierre Parrens, Grenoble, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 29, 1983, Ser. No. 508,911
Claims priority, application France, Jul. 1, 1982, 82 11570
Int. Cl.³ H01L 21/306; B44C 1/22; C03C 15/00, 25/06
U.S. Cl. 156—643 14 Claims



1. A process for producing the field oxide of an integrated circuit, wherein it comprises the following successive stages:

(a) producing a resin mask on a first region of a doped semiconductor substrate, in which will be formed the active component of the integrated circuit,

(b) production of a first etching over a height h of a second region of the doped semiconductor substrate, in which it is wished to produce the field oxide,

(c) implantation of ions in the second region of the remaining substrate, giving a doping of the same type as that of the substrate,

(d) deposition of an insulating layer on the complete substrate,

(e) deposition of a resin layer on the insulating layer,

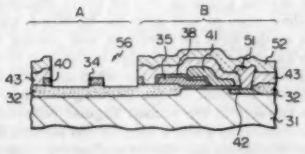
(f) production of a second simultaneous etching of the resin layer and the insulating layer, until the complete elimination of that region of the oxide layer positioned above the first region of the substrate in which will be produced the active component of the integrated circuit.

4,455,194

METHOD FOR PRODUCING A SEMICONDUCTOR DEVICE

Takashi Yabu, Yokohama, and Masao Kanazawa, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 17, 1983, Ser. No. 476,264
Claims priority, application Japan, Mar. 18, 1982, 57-043746
Int. Cl.³ H01L 21/306; B44C 1/22; C03C 15/00; C23F 1/02
U.S. Cl. 156—653 10 Claims



1. A method for producing a semiconductor device having a

semiconductor substrate and an insulating layer formed on the semiconductor substrate, comprising the steps of:

(a) forming a fuse layer on the insulating layer;

(b) forming an interrupting layer on the fuse layer and the insulating layer, for interrupting an etching process;

(c) forming an insulating protective layer on the interrupting layer;

(d) selectively etching the insulating protective layer to form a preceding window; and

(e) selectively etching the interrupting layer to complete the preceding window by which a portion of the fuse layer and a portion of the insulating layer adjacent to the fuse layer portion are exposed.

4,455,195

FIBROUS FILTER MEDIA AND PROCESS FOR PRODUCING SAME

Homan B. Kinsley, Powhatan, Va., assignor to James River Corporation, Richmond, Va.

Filed Jan. 5, 1982, Ser. No. 337,158

The portion of the term of this patent subsequent to Jun. 19, 2001, has been disclaimed.

Int. Cl.³ D21B *1/14*; D21H *5/14*

U.S. Cl. 162—13 **16 Claims**

1. An improved fibrous filter material for filtration of fluid media, said media being comprised largely of fibers, which comprises

(a) a random-laid sheet-like filter structure formed of a substantial fraction of lignin-containing fibers derived from the disc refining in a substantially dry condition of substantially undelignified wood chips having a lignin content of at least about 10%, under steam pressures in the range of about 90 psig to about 120 psig, at temperatures in the range of from about 330° F. to about 350° F., and using energy levels in the range of from about 8 to about 35 HPD/ADT,

(b) said disc refining taking place in the absence of substantial liquid medium in said refiner,

(c) said ligin-containing fibers being characterized by having most of their original lignin content and by having a smooth wall structure, substantially free of fiber-bonding surface fibrils and being substantially non-self-bonding to adjacent like fibers in the absence of elevated temperatures,

(d) said lignin-containing fiber fraction having a freeness of not less than about 725 ml (CSF).

4. The process of making fibrous filter material for the filtration of fluid media, which comprises

(a) furnishing a fibrous, substantially undelignified, lignin-containing raw material having a lignin content of at least about 10%,

(b) reducing said lignin-containing material to individual pieces of a size appropriate for disc refining,

(c) preheating said lignin-containing material pieces by steam at a temperature of from about 330° F. to about 350° F. and a pressure of from about 90 psig to about 120 psig for a period sufficient to enable the material to be heated and the lignin content thereof to be softened,

(d) deriving from said raw material lignin-containing fibers having most of their original lignin content by disc refining said preheated material in a substantially dry condition and while maintaining said steam temperature of from about 330° F. to about 350° F. and pressure of from about 90 psig to about 120 psig and under refiner settings requiring an average energy usage for refining of the lignin-containing material of from about 8 to about 35 HPD/ADT,

(e) screening a slurry of said disc refined material to remove oversize fibers and shives,

(f) said screened material having a freeness of not less than about 725 ml (CSF),

(g) laying the screened, lignin-containing fibers in a random fashion to form a free, porous sheet-like filter structure with minimum self-bonding between said screened fibers, and

(h) imparting to said laid fibers sufficient bonding characteristics to effect at least a minimum degree of bonding between fibers in the region of fiber contact areas.

4,455,196

THERMOCATALYTIC REACTOR AND PROCESS FOR PRODUCING SAME

Laurence B. Craig, Glen Cove, and Alfred J. Farina, Baldwin, both of N.Y., assignors to Thermocatalytic Corporation, Williston Park, N.Y.

Division of Ser. No. 346,278, Feb. 5, 1982, Pat. No. 4,381,970. This application Dec. 10, 1982, Ser. No. 448,715

Int. Cl.³ D21H *5/18*

U.S. Cl. 162—152 **7 Claims**

1. A reactor cylinder for use in a radiant heater, said cylinder being formed by the following process:

preparing a liquid vehicle including:

an alumina dispersion including dispersible alumina in an amount of at least 1% by weight of the entire vehicle; an acid in an amount up to about 0.2% by weight of the entire vehicle; and water in an amount between about 10% and about 30% by weight of the entire vehicle;

water added to dilute the dispersion in an amount between about 40% and about 80% by weight of the entire vehicle;

magnesium sulfate added to said vehicle in an amount up to about 4% by weight of the entire vehicle;

colloidal silica added to said vehicle in an amount up to about 10% by weight of the entire vehicle; and powdered talc added to said vehicle in an amount of at least 0.0001% by weight of the entire vehicle;

admixing with said liquid vehicle a combination of solid alumina and silica fibers in a ratio of grams of solid fibers to gallons of liquid vehicle of at least 8:1;

blending said solid fibers and said liquid vehicle to form a slurry;

and

vacuum molding said slurry about a mandrel to form said reactor cylinder having a porosity effective to permit an air-gas mixture to pass from an interior space of said reaction cylinder to an exterior surface thereof so as to support a catalytic combustion of said air-gas mixture.

4,455,197

STOCK SUPPLY SYSTEM FOR PAPER MACHINE

Denis Croteau, St. Francois de Laval; Roman Caspar; Ramamurthy G. Krishnan, both of Beaconsfield; Alexander Malashenko, Dollard des Ormeaux; Rodney H. Bryce, Lachine; Valdur Soomet, Montreal West, and Giovanni Deperis, Beaconsfield, all of Canada, assignors to Dominion Engineering Works Limited, Lachine, Canada

Continuation of Ser. No. 246,927, Mar. 24, 1981, abandoned. This application Dec. 6, 1982, Ser. No. 447,249

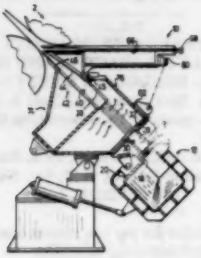
Claims priority, application Canada, Apr. 2, 1980, 349245

Int. Cl.³ D21F *1/02, 1/06*

U.S. Cl. 162—343 **10 Claims**

1. Apparatus for supplying stock to a paper making machine comprising: a flow distributor of progressively diminishing rectangular section extending a cross machine direction having the larger end thereof as an inlet for connection to a stock supply, the smaller end thereof as an outlet for excess stock, and an elongated aperture extending in the cross machine direction having an apertured distributor plate extending in covering relation therewith; a headbox is aligned relation with the distributor plate having a mixing chamber in unobstructed flow relation with the apertures of the plate, a diffuser section extending from the opposite side of said mixing chamber from said plate, said diffuser section having a plurality of layers of tubes of progressively increasing cross section in the downstream direction, including throttle plate means located at the

upstream end of said diffuser section and having orifices thereof in aligned relation and directly connected with respective ones of said tubes, a parallel flow chamber of predeter-



mined length at the downstream end of the diffuser section to receive stock from the tubes, in operation, and a convergent nozzle terminating at a slice opening, to transfer said stock to a forming section of said machine.

4,455,198

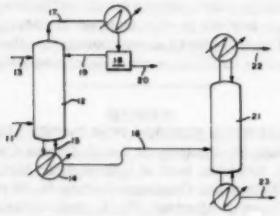
EXTRACTION AND/OR EXTRACTIVE DISTILLATION OF ETHANOL FROM AQUEOUS SOLUTIONS

David Zudkevitch, Deuville; David K. Preston, Hope, and Stephen E. Belsky, Parsippany, N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 276,302, Jun. 22, 1981, abandoned. This application Nov. 26, 1982, Ser. No. 444,925

Int. Cl.³ B01D *3/34, 3/40*

U.S. Cl. 203—19 **22 Claims**



1. A method for the concentration of ethanol which comprises the steps:

(a) distilling a feed mixture consisting essentially of water and ethanol with a solvent comprising a cyclic ketone of at least seven carbons or cyclic alcohol of at least eight carbons to produce a first overhead stream consisting essentially of water and a first bottoms stream consisting essentially of ethanol and solvent, and

(b) distilling the first bottoms stream to produce an overhead stream consisting essential of ethanol and a bottoms stream consisting essentially of solvent.

17. A method for the concentration of ethanol which comprises extracting a feed mixture consisting essentially of ethanol and water with a solvent comprising a cyclic ketone of at least seven carbons or cyclic alcohol of at least eight carbons to produce a raffinate comprising water and an extract consisting essentially of solvent and ethanol, and distilling the extract to produce an overheads consisting essentially of ethanol and a bottoms consisting essentially of solvent.

4,455,199

METHOD OF MANUFACTURING A TIMEPIECE COMPONENT

Tadao Enomoto, Tanashi, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

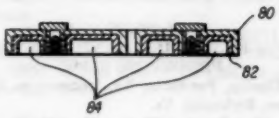
Division of Ser. No. 358,750, Mar. 16, 1982, Pat. No. 4,404,067. This application Jun. 13, 1983, Ser. No. 504,099

Claims priority, application Japan, Mar. 24, 1981, 56-42645; Apr. 14, 1981, 56-55119

The portion of the term of this patent subsequent to Sep. 13, 2000, has been disclaimed.

Int. Cl.³ C25D *1/00, 1/20*

U.S. Cl. 204—4 **6 Claims**



1. A timepiece display component comprising:

a first metal layer formed by electroforming processing step; and

a second metal layer formed upon said first metal layer by electroforming processing step;

said first metal layer having an internal compressive stress while said second metal layer has an internal tensile stress such that said internal stresses are arranged to cancel each other out to reduce the amount of warping of said timepiece display component; and

said first metal layer including a flat portion, a boss portion extending from said flat portion through said second metal layer, and a bore formed through said boss portion, said second metal layer including a flat portion formed on the flat portion of said first metal layer, and a boss portion formed around an outer wall of the boss portion of said first metal layer.

4,455,200

METHOD FOR ETCHING ALUMINUM FOIL FOR ELECTROLYTIC CAPACITORS

Yoshiyuki Okamoto, 2406-4, Futamatachofutamata, Tenryu, Shizuoka, Japan (433-33)

PCT No. PCT/JP82/00022, 371 Date Jun. 28, 1982, 102(e) Date Jun. 28, 1982, PCT Pub. No. WO82/02620, PCT Pub. Date Aug. 5, 1982

PCT Filed Jan. 25, 1982, Ser. No. 394,939

Claims priority, application Japan, Jan. 29, 1981, 56-10798

Int. Cl.³ C25F *3/04*

U.S. Cl. 204—33 **10 Claims**

1. A method of etching aluminum foil for electrolytic capacitors comprising

first etching using a high frequency alternating current of 1 KHz or above, and then

second etching using an alternating current of a frequency lower than 1 KHz.

4,455,201

BATH AND METHOD FOR ANODIZING ALUMINIZED PARTS

Siegfried Birkle, Hochstadt/A; Klaus Stoger, Nuremberg, both of Fed. Rep. of Germany, and Hans De Vries, Heerde, Netherlands, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 29, 1983, Ser. No. 480,061

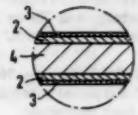
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 3211782

Int. Cl.³ C25D *11/08, 11/10*

U.S. Cl. 204—58 **7 Claims**

3. A process for anodizing aluminum coated metallic parts comprising anodically oxidizing the aluminum coating in a

sulfuric acid aqueous solution bath containing about 1050 g to about 1400 g per liter of pure sulfuric acid with a density of 1.84, about 10 to about 30 g per liter of a polyhydroxy alcohol



selected from glycol, glycerin and pentaerythritol, and about 1 to about 100 g per liter of a multibasic aliphatic acid selected from n-alkadioic acid of 2 to 8 carbons, at a pH value of less than 1 and a current density of 0.5 to 3 A/dm^2 at 0 to 30° C.

4,455,202

ELECTROLYTIC PRODUCTION OF LITHIUM METAL

Kwame Sintim-Damoa; Srinivasa S. N. Reddy, both of Naperville, and E. Scott McCormick, Batavia, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 2, 1982, Ser. No. 404,316

Int. Cl.^{3} C25C *3/02*

U.S. Cl. 204—68 **21 Claims**

1. A process for electrolytic production of lithium which comprises electroreducing a lithium compound in a cell comprising a liquid metal cathode and a fused salt electrolyte wherein said lithium compound is dispersed in said fused salt electrolyte and is selected from the group consisting of lithium oxide, lithium hydroxide, lithium carbonate, spodumene, petalite, and lepidolite, and said liquid metal cathode is of greater density than said fused salt electrolyte.

4,455,203

PROCESS FOR THE ELECTROLYTIC PRODUCTION OF HYDROGEN PEROXIDE

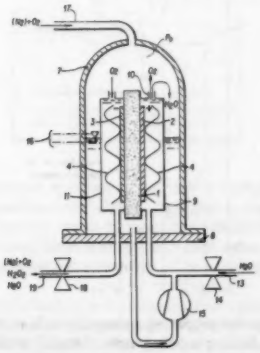
Samuel Stucki, Baden, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed May 13, 1983, Ser. No. 494,255

Claims priority, application Switzerland, May 28, 1982, 3294/82

Int. Cl.^{3} C25B *1/30*

U.S. Cl. 204—84 **5 Claims**



1. A process for the electrochemical production of hydrogen peroxide, H_2O_2, in an electrochemical cell from water or from an aqueous solution and oxygen, which comprises using a H_3O^+— or OH^-—conducting solid electrolyte (1) as electrolyte, using porous, gas-permeable electrically conductive coatings (2, 3) as electrodes, supplying the solid electrolyte with water on the anode side and with an oxygen-containing gas or pure oxygen on the cathode side, and withdrawing on the cathode side H_2O_2, wherein the H_2O_2 is the reaction product of O_2 supplied to the cathode and H^+ ions which are liberated at the anode and pass through the solid electrolyte to react at the cathode.

4,455,204

PROTECTING METAL SUBSTRATES FROM CORROSION

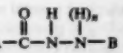
George Pieslak, Menlo Park, and Elena C. Fritchle, Palo Alto, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 282,354, Jul. 13, 1981. This application May 21, 1982, Ser. No. 380,593

Int. Cl.^{3} C23F *13/00*; F16L *9/14*; B32B *27/00*

U.S. Cl. 204—147 **35 Claims**

1. An article of a heat-recoverable material having coated on at least a part of the surface thereof an adhesive composition comprising an adhesive component and, in an amount sufficient to impart improved resistance to cathodic disbondment to the adhesive composition, a hydrazine derivative of the formula



wherein n is 0 or 1;

A is a radical selected from the group consisting of alkyl, aryl, aralkyl, hydrazido, radicals of the formula

wherein m is 0–20, Y is alkyl, aryl or heterocyclic and Z is alkyl, aryl or heterocyclic, and substituted derivatives thereof wherein the substitutents are lower alkyl, halogen or hydroxyl;

when n is 1, B is selected from the group consisting of alkyl, aryl, aralkyl, radicals of the formula

where Y, Z and m are as defined above, and substituted derivatives thereof, wherein the substituents are lower alkyl, halogen or hydroxyl; and

when n is 0, B is a divalent radical of the formula $=CH—(CH_2)_q—W$ wherein q is 0–20 and W is alkyl, aryl or heterocyclic, and substituted derivatives thereof, wherein the substituents are lower alkyl, halogen or hydroxyl.

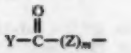
12. A pipe having bonded to the surface thereof a polymeric coating, said coating being bonded to said pipe with an adhesive composition comprising an adhesive component and from about 0.01 to about 30% by weight, based on the total weight of the adhesive composition of a hydrazine derivative of the formula

wherein n is 0 or 1;

A is a radical selected from the group consisting of alkyl, aryl, aralkyl, hydrazido, radicals of the formula

wherein m is 0–20, Y is alkyl, aryl or heterocyclic and Z is alkyl, aryl or heterocyclic, and substituted derivatives thereof wherein the substitutents are lower alkyl, halogen or hydroxyl;

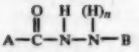
when n is 1, B is selected from the group consisting of alkyl, aryl, aralkyl, radicals of the formula



where Y, Z and m are as defined above, and substituted derivatives thereof, wherein the substituents are lower alkyl, halogen or hydroxyl; and

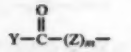
when n is 0, B is a divalent radical of the formula $=CH-(CH_2)_q-W$ wherein q is 0–20 and W is aikyl, aryl or heterocyclic, and substituted derivatives thereof, wherein the substituents are lower alkyl, halogen or hydroxyl.

28. A method of protecting a metal substrate from corrosion which comprises bonding a protective coating to said pipe with an adhesive composition comprising an adhesive component and, in an amount sufficient to impart improved resistance to cathodic disbondment to the adhesive composition, hydrazine derivative of the formula



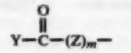
wherein n is 0 or 1;

A is a radical selected from the group consisting of alkyl, aryl, aralkyl, hydrazido, radicals of the formula



wherein m is 0–20, Y is alkyl, aryl or heterocyclic and Z is alkyl, aryl or heterocyclic, and substituted derivatives thereof wherein the substitutents are lower alkyl, halogen or hydroxyl;

when n is 1, B is selected from the group consisting of alkyl, aryl, aralkyl, radicals of the formula



where Y, Z and m are as defined above, and substituted derivatives thereof, wherein the substituents are lower alkyl, halogen or hydroxyl; and

when n is 0, B is a divalent radical of the formula $=CH-(CH_2)_q-W$ wherein q is 0–20 and W is alkyl, aryl or heterocyclic, and substituted derivatives thereof, wherein the substituents are lower alkyl, halogen or hydroxyl;

applying a negative electrical potential to said substrate, thereby impressing an electric current through said substrate.

4,455,205

UV CURABLE POLYSILOXANE FROM COLLOIDAL SILICA, METHACRYLOYL SILANE, DIACRYLATE, RESORCINOL MONOBENZOATE AND PHOTOINITIATOR

Daniel R. Olson, Schenectady, and Karen K. Webb, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 1, 1981, Ser. No. 269,122

The portion of the term of this patent subsequent to Sep. 7, 1999, has been disclaimed.

Int. Cl.[3] **C08F** *2/50*; **C08G** *77/20*

U.S. Cl. 204—159.13 **1 Claim**

1. A substantially solvent free UV curable organopolysiloxane hard coat composition comprising by weight

(A) 1–60% by weight of colloidal silica,

(B) 1–50% of a material resulting from the hydrolysis of γ-methacryloxypropyltrimethoxysilane,

(C) 25% to 90% of an acrylate monomer mixture of hexanedioldiacrylate and trimethylolpropane triacrylate,

(D) 0.1 to 5% of α,α-diethoxyacetophenone and

(E) an effective amount of resorcinol monobenzoate.

4,455,206

SHAPED ARTICLE OF COLLAGEN AND PROCESS FOR PREPARING SAME

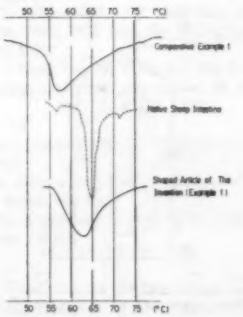
Masayuki Funabashi, and Yoshikazu Kokubu, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1981, Ser. No. 332,711

Claims priority, application Japan, Jul. 27, 1981, 56-117498

Int. Cl.[3] **C25D** *13/06, 13/12*

U.S. Cl. 204—181 F **7 Claims**


50 55 60 65 70 75 (°C)
Comparative Example 1
Native Sheep Intestine
Shaped Article of The Invention (Example 1)
50 55 60 65 70 75 (°C)

1. A process for preparing a shaped article of collagen comprising cross-linking a collagenous material so that the difference of the peak maximum temperatures of endothermic denaturation of the material between before and after the cross-linking falls in the range of 1.0° to 10° C. and the peak maximum temperature after the cross-linking falls in the range of 63° to 74° C., fibrating the cross-linked collagenous material to prepare an aqueous dispersion with the viscosity of 100 to 2000 cP and the spinnability of 30 to 80 mm at the concentration of 1% by weight of collagen fiber and subjecting the dispersion to electrodeposition.

4,455,207

METHOD FOR METALLIZING CARBON FIBER REINFORCED PLASTIC MEMBERS

Bruno Sartor, Inden-Pier; Werner Jäger, Jülich; Horst Ebinger, Bad-Soden-Salmünster; Günther Luthardt, Rodenbach, and Walter Bergmann, Hanau, all of Fed. Rep. of Germany, assignors to Uranit GmbH, Jülich and Nuken GmbH, Hanau, both of, Fed. Rep. of Germany

Filed Aug. 23, 1982, Ser. No. 410,859

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1981, 3136283

Int. Cl.³ C23C *15/00*; B05D *3/06*

U.S. Cl. 204—192 E **6 Claims**

1. Method for metallizing the surface of a carbon fiber reinforced plastic member by vapor-deposition of a metal layer in a high vacuum, with a glow treatment in which there is a glow discharge taking place before the vapor-deposition process, comprising:

(a) first removing the surface of the plastic member to be metallized until the carbon fibers lying closest to the surface are partially exposed enough to permit uniform development of the glow discharge, and sufficient to maintain the fibers permanently embedded in the plastic member;

(b) then degassing the plastic member;

(c) applying a negative high voltage across the degassed plastic member to bring about a glow treatment of the plastic member before the metal vapor deposition; and

(d) continuing the glow treatment into the initial phase of the metal vapor-deposition process.

4,455,208

APPARATUS FOR ELECTROLYSIS USING TWO ELECTROLYTICALLY CONDUCTING PHASES

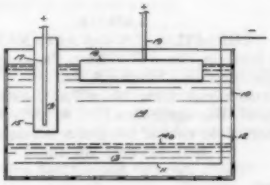
Frank S. Holland, Hazel Grove, England, assignor to Manchem Limited, Manchester, England

Division of Ser. No. 456,315, Jan. 6, 1983, Pat. No. 4,416,743. This application Jul. 22, 1983, Ser. No. 516,296

Claims priority, application United Kingdom, Jan. 7, 1982, 8200355

Int. Cl.³ C25C *7/00*

U.S. Cl. 204—261 **9 Claims**



1. An electrolytic apparatus combination composed of

a corrosion-resistant cell chamber adapted to contain at least first and second mutually-immiscible electrolytes, in liquid-liquid interfacial contact with each other;

said first electrolyte is composed of an aqueous electrolytic solution;

said second electrolyte is composed of an aqueous-immiscible liquid containing an organic salt complex;

a first electrode placed in electrical contact solely with said first electrolyte and with no electrical contact with said second electrolyte;

a second electrode placed in electrical contact solely with said second electrolyte and with no electrical contact with said first electrolyte;

a direct current power source;

first and second electrical feeder lines for connecting said first and second electrodes to the opposite poles of said direct current power source;

means for varying the amount of electrical current supplied to said respective electrodes.

4,455,209

ELECTRODE FRAME FOR THE ELECTROLYTIC RECOVERY OF METALS

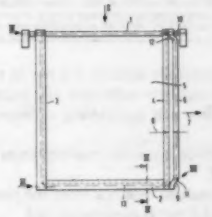
Manfred P. Hermann, Nuremberg, Fed. Rep. of Germany, assignor to J V Kunststoffwerk GmbH, Georgensgmünd, Fed. Rep. of Germany

Filed Jun. 3, 1983, Ser. No. 500,874

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1982, 3221371

Int. Cl.³ C25C *7/00, 7/04*

U.S. Cl. 204—279 **11 Claims**



1. Electrode frame for the electrolytic recovery or purification of metals including an upper and a lower horizontal arm as well as two lateral arms for connecting together the upper and lower horizontal arms, the arms each having a longitudinal dimension and preferably being made of polypropylene,

characterized in that at its side facing away from the frame interior (5) at least one of the arms (1–4) is flanked by a pressure bar (6) which extends essentially parallel to the at least one arm and is adjacent thereto, with the pressure bar being charged by spring pressure in a direction (7) leading away from the frame interior (5) and perpendicular to the longitudinal dimension of the at least one arm.

4,455,210

MULTI LAYER ION EXCHANGING MEMBRANE WITH PROTECTED INTERIOR HYDROXYL ION REJECTION LAYER

Thomas G. Coker, Lexington; Anthony B. LaConti, Lynnfield, both of Mass., and Edward N. Balko, Middletown, N.J., assignors to General Electric Company, N.Y.

Continuation-in-part of Ser. No. 354,854, Mar. 4, 1982, Pat. No. 4,402,806. This application Nov. 3, 1982, Ser. No. 439,013

Int. Cl.³ C25B *1/34*

U.S. Cl. 204—283 **3 Claims**

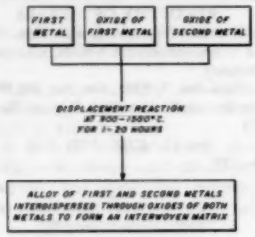
1. A multi-layer, ion transporting membrane having at least two outer and an interior layer, said outer layers being exposed to electrolysis products and anolyte and catholyte solutions, all of said layers containing functional groups only capable of exchanging ions of the same kind, all layers of said membrane thus being permselective to the passage of ions of one kind and rejecting ions of the opposite kind, the capacity of the interior layer to reject ions of the other kinds exceeding that of the outer layers in said membranes, at least one of said outer layers being porous and gas permeable.

4,455,211

COMPOSITION SUITABLE FOR INERT ELECTRODE

Siba P. Ray, Pittsburgh, Pa., and Robert A. Rapp, Columbus, Ohio, assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 11, 1983, Ser. No. 483,693
Int. Cl.[3] C25C 3/00; C25B 11/04
U.S. Cl. 204—293 18 Claims


FIRST METAL
OXIDE OF FIRST METAL
OXIDE OF SECOND METAL
DISPLACEMENT REACTION AT 900—1500°C. FOR 1—20 HOURS
ALLOY OF FIRST AND SECOND METALS INTERDISPERSED THROUGH OXIDES OF BOTH METALS TO FORM AN INTERWOVEN MATRIX

1. An inert electrode suitable for use in the production of metal by the electrolytic reduction of a metal compound dissolved in a molten salt comprising a composition consisting essentially of:

(a) an interwoven network resulting from the displacement reaction of:

(1) a first reactant selected from the class consisting of a metal and a metal compound; and

(2) a second reactant consisting of at least one metal compound,

said first and second reactants being capable of reacting to form an interwoven network consisting essentially of:

(1) at least one metal compound; and

(2) a second material selected from the group consisting of free metal, a metal alloy, or a mixture thereof; and

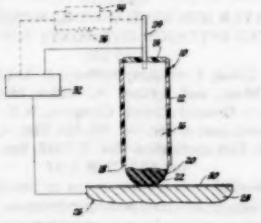
(b) at least one metal or metal compound which is nonreactive in said displacement reaction.

4,455,212

GEL ELECTRODE FOR EARLY DETECTION OF METAL FATIGUE

William J. Baxter, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 1, 1982, Ser. No. 353,163
Int. Cl.[3] G01N 27/30
U.S. Cl. 204—414 3 Claims



3. An electrode for detecting microcracks in an oxide film overlying a metal substrate and for developing a visible record indicating the microcracks, said electrode comprising

a housing having an opening, and

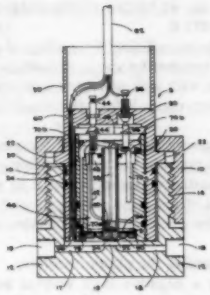
a pliable, electrically conductive gel body comprising iodide ions and starch, said body being contained in the housing and protruding from the opening to form an electrical contact.

4,455,213

PRESSURE EQUALIZATION SYSTEM FOR MEMBRANE TYPE AMPEROMETRIC SENSORS

Radhakrishna M. Neti, Brea, and Kenneth B. Sawa, Yorba Linda, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 29, 1980, Ser. No. 221,143
Int. Cl.[3] G01N 27/46
U.S. Cl. 204—415 27 Claims



1. In a gas sensor having an electrolytic cell including a housing, first and second electrodes and a gas permeable membrane, the improvement comprising:

(a) a passage for receiving fluid from the cell and for supplying fluid to the cell to equalize the pressures inside and outside of the cell;

(b) a first end section of said passage serving to connect said passage to a source of pressure outside of the cell;

(c) a second end section of said passage serving to connect said passage to the inside of the cell;

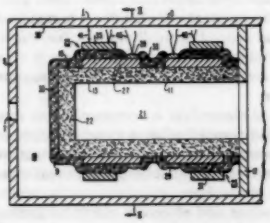
(d) a movable fluid plug located in said passage to prevent fluids external to said plug from entering said cell, said plug moving within the passage until the pressures on the inner and outer surfaces thereof are equal to one another.

4,455,214

THIN-FILM SENSOR APPARATUS

Arnold O. Isenberg, Forest Hills Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 407,675, Aug. 12, 1982, Pat. No. 4,428,817. This application Nov. 4, 1982, Ser. No. 439,249
The portion of the term of this patent subsequent to Jan. 31, 2001, has been disclaimed.
Int. Cl.[3] G01N 27/58
U.S. Cl. 204—428 10 Claims



1. A sensor apparatus comprising:

a sensor housing;

a porous mechanical support member of electrically nonconductive material mounted in said housing and dividing said housing into a first zone in communication with the

gas to be measured and a second zone in communication with a reference gas;

a first electrode disposed on said porous member in said first zone;

an electrode connection layer in electrical contact with and providing a terminal for said first electrode, said electrode connection layer preventing gaseous diffusion therethrough;

a thin film layer of solid electrolyte disposed on said first electrode layer and in contact with said electrode connection layer wherein said thin film layer and said electrode connection layer cooperate to effectively seal said porous mechanical support member and substantially isolate said first zone from said second zone; and

a second electrode disposed on said solid electrolyte opposite said first electrode;

whereby said first electrode is in communication with the reference gas through said porous support while said second electrode is in communication with the gas to be measured.

4,455,215

PROCESS FOR THE GEOCONVERSION OF COAL INTO OIL

David M. Jarrott, 1514 Jefferson Ave., New Orleans, La. 70112, and Frank E. Jarrott, 205 Woodhaven, De Soto, Tex. 75115

Filed Apr. 29, 1982, Ser. No. 372,919
Int. Cl.³ C10G *1/00*; E21B *43/27*
U.S. Cl. 208—8 LE **8 Claims**

1. A process for the geoconversion of coal into oil, comprising the steps of:

forming a coal slurry of coal and crude oil in which the percentage of coal in the coal slurry is in the range of about 60% to about 80%;

injecting the coal slurry into a preexisting oil well having a depth of about 10,000 to about 20,000 feet below the earth's surface to provide a geoconversion environment for the coal slurry having predetermined pressure conditions of approximately 1,500 lbs./in.^{2} to 4,500 lbs./in.^{2} and temperature conditions of approximately 200° to approximately 300° F.;

converting the coal into oil as a result of the combined action of the heat and pressure upon the coal; and

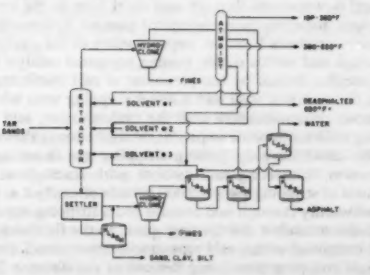
removing the resulting oil after sufficient time has elapsed for conversion of the coal into oil.

4,455,216

POLARITY GRADIENT EXTRACTION METHOD

Philip J. Angevine, West Deptford; Michael B. Carroll, Mantua; Stuart S. Shih, Cherry Hill, and Samuel A. Tabak, Wenonah, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 4, 1980, Ser. No. 212,919
Int. Cl.³ C10G *1/04*
U.S. Cl. 208—11 LE **7 Claims**



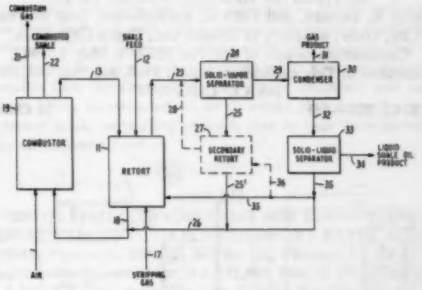
1. A process for recovering and deasphalting tar sands in an extraction column comprising contacting said tar sands with solvent under conditions to produce bitumen as an overhead phase, wherein in said process said tar sands are contacted with at least two polar solvents, said polar solvents being selected from the group consisting of a hydrocarbon containing 3 to 7 carbon atoms, mixtures thereof or a 200° F.–300° F. naphtha fraction, the least polar of which is injected into said column at a point nearest the bitumen taken-off stream point and the most polar of which is injected into said column at a point nearest the exit point of by-product comprising sand and asphalt.

4,455,217

RETORTING PROCESS

Bruce A. Reynolds, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 25, 1981, Ser. No. 324,793
Int. Cl.³ C10G *1/00*
U.S. Cl. 208—11 R **9 Claims**



1. In a retort process comprising: introducing fresh hydrocarbon-containing solids having a maximum particle size less than about one cm into the upper portion of a retorting zone; introducing a particulate heat transfer material at an elevated temperature into the upper portion of the retorting zone; introducing a nonoxidizing stripping gas into the lower portion of the retorting zone at a linear velocity that fluidizes at least a portion of the fresh hydrocarbon-containing solids and heat transfer material dropping through the retorting zone and causes mixing therebetween whereby sufficient heat is transferred from the heat transfer material to the fresh hydrocarbon-containing solids to heat the hydrocarbon-containing solids to a temperature at which retorting occurs; withdrawing a mixture of retorted solids and heat transfer material from the retorting zone and introducing it into a combustion zone wherein the char on the retorted solids is combusted to heat the heat transfer material to said elevated temperature; withdrawing an overhead stream from the upper portion of the retorting zone that comprises stripping gas, the vapors of retorting, and entrained fines having a maximum particle size less than about 250 microns; removing a portion of said fines from the overhead stream, said portion being comprised predominantly of particles having a particle size greater than about five microns; thereafter condensing the overhead stream to produce a liquid condensate containing substantially all of the entrained fines remaining in the stream, and removing fines from the condensate to produce a liquid oil product and wet solids, the improvement comprising recycling at least a portion of the wet solids into the combustion zone whereby the condensate component of the wet solids is combusted and the fines component of the wet solids is dried in contact with the mixture of the heat transfer material and the retorted solids.

4,455,218

HYDROGENATION OF CARBONACEOUS MATERIAL

Kenneth R. Dymock, and Malcolm C. Bell, both of Oakville, Canada, assignors to Inco Limited, Toronto, Canada

Filed Feb. 24, 1983, Ser. No. 469,440

Claims priority, application United Kingdom, Feb. 24, 1982, 8205496

Int. Cl.³ C10G *47/02*

U.S. Cl. 208—50 10 Claims

1. A process of directly hydrogenating liquid carbonaceous material, which process consists essentially of reacting the material with hydrogen in the presence of a catalyst derived by exposing $Fe_2(CO)_9$ to the conditions of said hydrogenation.

4,455,219

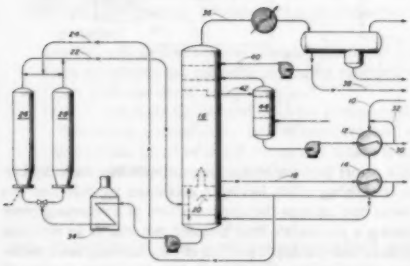
METHOD OF REDUCING COKE YIELD

Harry R. Janssen, and Gary L. Poffenbarger, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Continuation-in-part of Ser. No. 353,671, Mar. 1, 1982, abandoned. This application Feb. 9, 1983, Ser. No. 464,181

Int. Cl.³ C10G *9/14*

U.S. Cl. 208—131 34 Claims



1. In a delayed coking process carried out in a coker unit comprised of a coker furnace, a coke drum and a coker fractionator, wherein coker feedstock and recycle material are heated to coking temperature in said furnace and then passed to said coke drum where coke and overhead vapors are formed, wherein said overhead vapors are passed to said fractionator, wherein a portion of said overhead vapors are condensed and combined with said feedstock as heavy recycle, wherein the amount of said overhead vapors condensed is sufficient to provide good fractionator operation and sufficient to provide enough heavy recycle to effectively prevent coke formation on the tubes of said furnace, and wherein the coke yield is higher than is desired, the improvement comprising:

operating with an amount of heavy recycle that is not sufficient to effectively prevent coke formation on the furnace tubes, and adding to said feedstock as additional recycle a distillate hydrocarbon material having a boiling range which is at least in part lower than the boiling range of said heavy recycle, said distillate hydrocarbon material being added in an amount which, when combined with said heavy recycle, is effective to prevent coke formation on the tubes of said furnace, whereby coke formation on the tubes of said furnace is effectively prevented, the yield of liquid products from the process is increased, and the coke yield from the process is decreased.

4,455,220

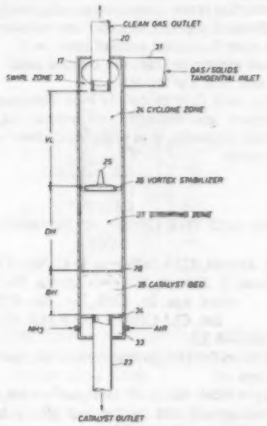
SEPARATION OF FLUID CRACKING CATALYST PARTICLES FROM GASEOUS HYDROCARBONS

Wesley A. Parker; Thomas S. Dewitz; George P. Hinds, Jr., all of Houston; John E. Gwyn, Katy; A. Haluk Bilgic, Houston, and Donald E. Hardesty, La Porte, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 23, 1982, Ser. No. 452,599

Int. Cl.³ C10G *11/18*

U.S. Cl. 208—161 10 Claims



1. A method for separating fluid cracking catalyst particles from hydrocarbon conversion products and stripping interstitial and adsorbed hydrocarbon gases therefrom which comprises passing a suspension of catalyst and gaseous hydrocarbons upwardly through a riser conversion zone in a fluid catalytic cracking process under elevated temperature conversion conditions; passing said suspension from said riser conversion zone into the upper portion of a separator-stripper vessel containing a gas/solids tangential inlet, a swirl zone, a cyclone zone, a vortex outlet, vortex stabilizing means, a catalyst disengaging space and a fluidized bed of catalyst; forming a fluid vortex in said swirl and cyclone zones from which a cyclonic separation is made between catalyst particles and gaseous hydrocarbon conversion products; centering the tip of said fluid vortex by contact with said vortex stabilizing means having a diameter of about one vortex outlet diameter or greater and being coaxially located at the bottom of said cyclone separation zone; defining the length of said cyclone separation zone by spacing said stabilizing means at least about two vortex outlet diameters below the bottom of said vortex outlet, which comprises an open ended vertical coaxial passageway extending from the upper portion of the separator vessel downwardly through said swirl zone to the top of said cyclone zone; removing separated gaseous hydrocarbon conversion products from the upper portion of the cyclone zone through said vortex outlet; passing separated catalyst through an annulus formed by the perimeter of said stabilizing means and the separator wall into a lower stripping zone which is in gaseous communication with the cyclone zone, said annulus being sufficiently wide to permit catalyst passage downwardly while simultaneously passing stripping gas in an upwardly direction; contacting said catalyst with from about 1 to 4 pounds of stripping gas per 1000 pounds of catalyst as it passes downwardly through said annulus and a stripping zone, which includes a catalyst disengaging space, to the fluidized catalyst bed contained within said separator-stripper vessel, the length of said stripping zone being defined as the distance from the stripping gas/catalyst bed contact zone to said vortex stabilizer means, said distance being sufficient to provide disengaging height between the top of said fluidized catalyst bed and the

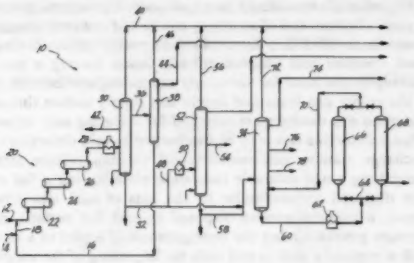
bottom of said stabilizing means so as to avoid slugs of catalyst carryover into said cyclone zone.

4,455,221

PROCESS FOR UPGRADING HEAVY HYDROCARBONS EMPLOYING A DILUENT

Jose L. Calderon, Caracas, and Ignacio Layrisse, San Antonio de Los Astos Estado Miranda, both of Venezuela, assignors to Intevep, Caracas, Venezuela

Filed Feb. 9, 1983, Ser. No. 465,179
Int. Cl.³ C10G 7/00
U.S. Cl. 208—347 **14 Claims**



1. A process for upgrading a heavy crude oil feedstock characterized by a high specific gravity, high pour point, high viscosity and high metal, sulfur, water, salt and conradson carbon contents for making coke suitable for metallurgical purposes comprising:

(a) mixing a diluent with incoming heavy crude oil so as to form a mixture of crude oil and diluent so as to lower the viscosity and facilitate dehydration and desalting of the crude oil;

(b) feeding the mixture of crude oil and diluent to a dehydrator wherein the water content of the mixture of crude

(c) feeding the dehydrated mixture of crude oil and diluent to a desalter wherein the salt content of the mixture of crude oil and diluent is reduced down to about not more than 5 PTB;

(d) feeding the dehydrated and desalted mixture of crude oil and diluent to an atmospheric distillation unit wherein gas hydrocarbon products, an overhead 500° F. minus liquid hydrocarbon product and a residuum are produced;

(e) feeding said overhead 500° F. minus liquid hydrocarbon product to a splitter unit for further treatment whereby naphtha and off gases are separated out as overhead products and a narrow boiling point diluent having a boiling range of from about 400° to 500° F. is produced;

(f) recycling said narrow boiling point diluent; and

(g) mixing said narrow boiling point diluent with said incoming heavy crude oil feedstock prior to dehydration and desalting so as to lower the viscosity of the crude and control its temperature and residence time in said dehydrator and said desalter so as to facilitate dehydration and desalting.

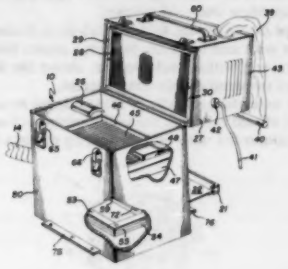
4,455,222

FLUX RECOVERY DEVICE

Thomas M. Less, 7 Blake St., Westboro, Mass. 01581

Continuation-in-part of Ser. No. 368,576, Apr. 15, 1982. This application Sep. 9, 1982, Ser. No. 416,158
Int. Cl.³ B07B 13/16; B01D 50/00
U.S. Cl. 209—12 **4 Claims**

1. Apparatus for separating slag and fines from reusable flux recovered during submerged-arc welding, comprising: a container; a wire screen horizontally subdividing said container into upper and lower chambers; a planar filter in said upper chamber, said filter being spaced vertically above said screen; an inlet communicating with said chamber between said filter and said screen; a vacuum source communicating with said upper chamber above said filter, said vacuum source being adapted to draw a mixture of reusable flux, slag, and fines into said upper chamber via said inlet, said inlet being arranged to direct said mixture towards said filter along a first path which is oblique with respect to said filter; and a planar impingement plate underlying a portion of said filter, said impingement plate



lying in said first path and being arranged to deflect said mixture from said first path into a second path passing across the underside of said filter; said planar filter being constructed so as to permit fines to pass therethrough while retaining slag and reusable flux therebeneath in said upper chamber, and said screen being constructed so as to retain slag in said upper chamber while permitting reusable flux to pass therethrough into said lower chamber.

4,455,223

FROTH FLOTATION METHOD FOR RECOVERING METAL VALUES WITH POLYHYDROXY FATTY ACIDS

Vojislav Petrovich, 1935 W. Schiller St., Chicago, Ill. 60622

Continuation-in-part of Ser. No. 241,560, Mar. 9, 1981, Pat. No. 4,368,116. This application Sep. 9, 1982, Ser. No. 416,288
Int. Cl.³ B03D 1/14
U.S. Cl. 209—167 **1 Claim**

1. In concentrating by froth flotation of metallic ores selected from the group of iron, chromium, cerium, antimony, arsenic, titanium, zirconium, thorium, vanadium, niobium, tantalum, and wolfram, which includes the subjecting of such ore material when finely ground to froth flotation process in the presence of dihydroxy stearic acid, or dihydroxy oleic acid, or their potassium salts, and in the presence of ammonium persulfate; the step of adding to the mineral slurry an amount of the order from 0.01 to 0.1 kg per ton of ore treated of said dihydroxy fatty acids, and an amount of the order from 0.02 to 0.2 kg per ton of ore treated of ammonium persulfate; said additions to aqueous dispersion of ore produce a froth floating product of said mineral values by continuing agitation and aeration of the aqueous dispersion of ore, and separating and recovering the wanted mineral value as float froth concentrate product.

4,455,224

APPARATUS FOR TREATING A PAPERMAKING SUSPENSION

Robert G. Kaiser, Seminole, Fla., assignor to Clark & Vicario Corporation, Pinellas Park, Fla.

Filed Mar. 19, 1979, Ser. No. 21,623
Int. Cl.³ B04C 5/28
U.S. Cl. 209—211 **4 Claims**

1. Apparatus for cleaning and deaerating an aqueous suspension of papermaking stock comprising

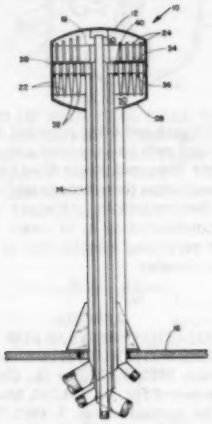
a plurality of centrifugal cleaners for separating suspension into dirt-rich and dirt-poor fractions, each cleaner having separate outlets through which said dirt-rich and dirt-poor fractions discharge therefrom,

an enclosed receiver for receiving and collecting the dirt-poor portions discharging from said cleaners,

vertically elongated pedestal structure, said receiver being disposed at the top of said pedestal structure, said cleaners being disposed at the underside of said receiver and arranged in side-by-side parallel array one with the others, with the dirt-poor outlet of each cleaner disposed to provide vertical discharge of dirt-poor fractions therefrom, each cleaner having a top side inlet opening for introducing suspension into said cleaner,

outlet pipe means connecting the dirt-poor discharge of said cleaner with said receiver, said pipe means terminating in an open end within said receiver above the level of any pond of suspension collecting therein,

a plenum extending radially of said pedestal structure at the bottom of said receiver, the inlet openings of said cleaners being connected with said plenum by means of inlet pipes



extending into said plenum, the heights of the inlet pipes extending into said plenum being varied to provide suspension flow access to such pipes at different levels above the bottom of said plenum thereby to inhibit existence of dead flow spaces and gas accumulation within said plenum,

a source of vacuum, and

means for connecting said source of vacuum with the head space in said receiver, dirt-poor suspension discharging into said head space being subjected to the influence of vacuum to effect deaeration of same, said pedestal structure comprising a plurality of conduits and including a conduit connected with said receiver for conveying dirt-poor suspension to a point of use, conduit means for supplying suspension to said plenum, and a conduit for conveying dirt-rich suspension to a subsequent cleaning operation, the dirt-rich outlets of said cleaners communicating with the last-mentioned conduit.

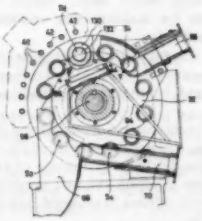
4,455,225

ROTARY LIGHT TESTER FOR CONTINUOUSLY INSPECTING EMPTY CANS

Kenji Morimoto, Tokyo, and Masato Ashina, Yokosuka, both of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Continuation of Ser. No. 256,333, Apr. 22, 1981, abandoned.
This application Mar. 9, 1983, Ser. No. 472,219
Claims priority, application Japan, Jun. 18, 1980, 55-81378
Int. Cl.³ B07C *5/344*
U.S. Cl. 209—588 **7 Claims**

1. A rotary light tester for continuously inspecting empty cans for defects comprising a star wheel means having a plurality of can receiving seat means for accepting empty cans one by one, an empty can supply station, a light detection station, a defective can discharge station and a good can discharge station, said stations being disposed about the periphery of said star wheel means, said can receiving seat means having a first section and a second section with the dividing line between said first and second sections being a radial line passing through the center of said star wheel means and through the center of a can in said seat means, said first section having a concave configuration for receiving said can, said second section having a configuration differing from the configuration of said first section and having sliding means for facilitating exiting of said can from said seat means, said sliding means comprising an insert on said second section, said insert being made of a plastic material having the property of facilitating sliding of said cans on said insert, slide pusher means operable to push a bottom end of an empty can in said can receiving seat means in an axial direction, said slide pusher means having a head, vacuum and vacuum release means having a nozzle opening in said head for vacuously supporting said bottom end of the empty can from said empty can supply station through said good can discharge station and for releasing said vacuum when a defective can is to be discharged in said defective can discharge station, said vacuum and vacuum release means comprising a non-rotatable mediation plate having a flat surface disposed perpendicular to the axis of said star wheel means, a vacuum groove disposed in said flat surface, said vacuum groove having the configuration of a part of a circle with a beginning and an end with the beginning of the vacuum groove being disposed generally aligned with said empty can supply station and the end of said vacuum groove being generally aligned with said good can discharge station, said slide



pusher means having a circular plate with a plate surface disposed perpendicular to the axis of said star wheel, said circular plate having a vacuum opening, conduit means in said slide pusher means extending between said vacuum opening and said nozzle opening, said vacuum opening being adapted to communicate with said vacuum groove in said mediation plate to provide vacuum to said nozzle opening for vacuously supporting said bottom end of the empty can from said empty can supply station through said good can discharge station, said vacuum groove having a narrow section located at a position generally aligned with said defective can discharge station, air pressure openings in said mediation plate adjacent to said narrow section of said vacuum groove, said vacuum opening in said circular plate being constructed and arranged to communicate with said air pressure openings adjacent to said narrow section of said vacuum groove such that air pressure from said air pressure openings is thereby supplied to said vacuum opening in said circular plate and thence to said nozzle opening to release a can from said seat means when the latter is in said defective can discharge station, biasing means biasing said mediation plate in an axial direction toward said circular plate to provide biasing and sliding contact between said mediation plate and said circular plate on said slide pusher means, light source means for irradiating the can passing through said light detection station, light seal plate means for sealing light entering into the interior of the can, and light detector means for detecting light generating through defects in the can, said defective can discharge station being disposed at a discharge position offset from a vertical line passing through the center

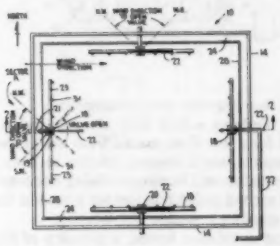
of said star wheel means, said vacuum and vacuum release means applying air pressure from said air pressure openings to release a defective can in said defective can discharge station in response to detection of a defective can by said light detector means, said seat means being constructed and arranged such that when said vacuum is released at said defective can discharge station, the defective can therein is free to fall by its own weight from said seat means into said defective can discharge station.

4,455,226

METHOD AND APPARATUS FOR TREATING THE SURFACE OF A BODY OF LIQUID

Noam Lahav, Palo Alto, assignor to Solmat Systems, Ltd., Yavne, Israel

Filed Dec. 22, 1980, Ser. No. 218,706
Int. Cl.³ E02B *15/00*
U.S. Cl. 210—170 **16 Claims**



1. Apparatus adapted to improve the characteristics of a body of liquid by reducing evaporation of said liquid, inhibiting liquid wave formation and cleaning dust and other particles from the surface of said liquid, said apparatus comprising:

(a) means for applying oil onto the surface of said liquid from at least one predetermined area;

(b) means for collecting said oil from said surface; and

(c) means for recirculating said oil to said at least one predetermined area.

4,455,227

COMBINATION FILTER HEAT EXCHANGER

Harold H. Harms, II, Lake Park, Fla., and Corby J. Gould, Grass Valley, Calif., assignors to Harmsco, Inc., North Palm Beach, Fla.

Filed Mar. 10, 1983, Ser. No. 474,042
Int. Cl.³ B01D *35/18*
U.S. Cl. 210—184 **8 Claims**

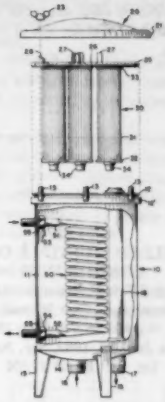
1. A fluid cartridge filter comprising:

(A) a vessel having an open end and a removable dome-shaped cover for the open end,

(B) a single supporting plate for a plurality of filter cartridges, said plate having: apertures therein for said filter cartridges, said plate being removable with the cartridges thereon as a unit, and said plate being clampable at its edges between said open end of said vessel and its said cover, said unit having said filter cartridges mounted in all but one of said apertures in said plate, and said plate also having mounted thereon lifting means engaging the inside of said dome-shaped cover,

(C) an outlet duct having one end thereof extending freely through said one aperture in said plate, said outlet duct having a shoulder and gasket near its said one end adjacent said plate on the opposite side of said plate from said lifting means whereby said gasket is the only means for sealing said outlet duct to said plate and said gasket is held in sealing engagement with said plate by said lifting means, and

(D) a helical heat exchanger tube in said vessel supported by its inlet and outlet ducts through the wall of said vessel, whereby said helical tube surrounds at least one of said cartridge filters and is surrounded by the other of said



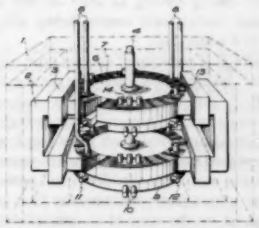
cartridge filters, whereby said filter cartridges may be easily removed and replaced without interference with said heat exchanger tube.

4,455,228

ROTARY MAGNETIC SEPARATORS

George H. Jones, 1 Trenawin La., Conner Downs, Hayle, Cornwall TR27 5JG, England

Filed Sep. 28, 1982, Ser. No. 425,968
Claims priority, application United Kingdom, Nov. 16, 1981, 8134506
Int. Cl.³ B03C *1/30*
U.S. Cl. 210—222 **5 Claims**



1. A rotary magnetic separator of the kind described, said separator including: a common drive shaft; a pair of rotor plates mounted on the common drive shaft; at least two magnetic separating stations arranged diametrically opposite one another; a magnetic yoke structure associated with each station, each structure having a pair of legs which cooperate with respective rotor plates, and a winding associated with each leg such that when said windings are energized, the legs are of opposite magnetic polarity;

characterized by means for maximizing throughput while minimizing energy consumption, said means including:

(a) means for providing the number of rotor plates to the extent of an even number greater than 2, the rotor plates being arranged in two sets one above the other on the common shaft;

(b) means for providing each magnetic yoke structure with a number of legs which is an even number greater than 2, the legs being arranged in two sets for cooperation with the respective sets of rotor plates;

(c) means for providing a winding for each set of legs, the

windings being arranged such that when energized, all the legs of one set have one magnetic polarity and all the legs of the other set have the opposite polarity; and

(d) means for providing each magnetic yoke structure with at least one enlarged cross-section in the radial direction in its central zone.

4,455,229

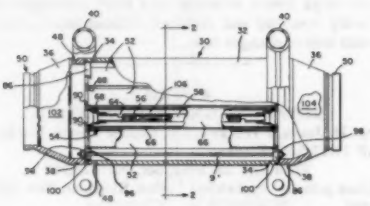
FULLY SHIELDED MULTIPLE CORE WATER CONDITIONER

Scott A. Sanderson, and Eric F. Bruot, both of Fort Wayne, Ind., assignors to Kemtune, Inc., Fort Wayne, Ind.

Continuation of Ser. No. 400,452, Jul. 21, 1982, abandoned. This application Jun. 30, 1983, Ser. No. 509,980

Int. Cl.³ B01D *35/06*

U.S. Cl. 210—222 **28 Claims**



1. A water conditioner comprising:

a hollow outer casing having an inlet on one end and an axially spaced outlet, said casing being adapted to be connected in a water line;

a plurality of elongate permanent magnet core units received in said outer casing, each said core unit comprising: a magnetic field producing permanent magnet encased within an inner casing of non-magnetic material, chamber means for providing a flow path for water longitudinally along said encased magnet, said chamber means including magnetic sleeve means for shielding each permanent magnet from the others and collecting the lines of magnetic force produced by the magnet to maximize the lines of force that intersect perpendicularly to the direction of flow of the water flowing through the chamber means, said collector means comprising a collector sleeve of magnetic material disposed around said inner casing and permanent magnet, and means for spacing radially said sleeve and inner casing to form a generally annular treatment chamber therebetween, said treatment chamber having an inlet and an outlet;

said permanent magnet core units being suspended within said outer casing such that they are in close proximity to each other and are generally parallel to each other and to the axis of the outer casing;

an inlet chamber within said outer casing intermediate said casing inlet and said permanent core units; and

inlet manifold means within said outer casing for diverting at least a portion of the water entering said inlet chamber from the casing inlet into the permanent magnet core treatment chambers through their respective inlets;

whereby the diverted water flows through the treatment chambers wherein it is subjected to the magnetic fields and then flows out of the outer casing outlet.

4,455,230

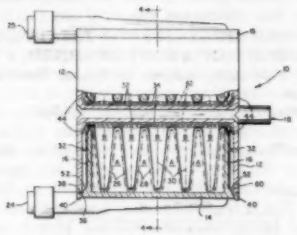
PLEATED MEMBRANE TRANSFER DEVICE UTILIZING POTTING AND THIXOTROPIC ADHESIVE

Roger J. Elgas, Littleton, and Gary A. Carson, Evergreen, both of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Filed Apr. 26, 1982, Ser. No. 371,978

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—232 **7 Claims**



1. A fluid flow transfer device comprising

a housing defining a first inlet channel and a first outlet channel for a first fluid spaced from each other by a fluid flow distance, and a housing interior surface,

a casing sealed to said housing defining a second inlet channel and second outlet channel for a second fluid,

a pleated membrane within said housing,

said pleated membrane having a plurality of folds defining fold edges extending along first and second opposite sides of said membrane, fold edges on said first side of said pleated membrane facing said first inlet and outlet channels, fold edges on said second side of said pleated membrane facing said second inlet and outlet channels, said pleated membrane defining spaces including fluid flow passages between adjacent said folds,

fluid-transmissive spacers between said folds on said first side of said membrane facing said first inlet and outlet channels,

a layer of thixotropic adhesive on said first side of said pleated membrane on portions of said membrane extending the entire fluid flow distance between portions of said membrane facing said first inlet and outlet channels,

said thixotropic adhesive contacting said fold edges of said membrane to provide a seal between adjacent membrane fold edges, but not occupying said fluid flow passages between adjacent folds, and

a layer of potting material between said layer of thixotropic adhesive and said interior surface of said housing, said potting material extending the entire fluid flow distance along said layer of thixotropic adhesive between said inlet and outlet channels,

said potting material being a different composition than said thixotropic adhesive and being of a composition that would wick between spaced-apart adjacent fold edges of membrane folds having said spacers between them prior to curing.

4,455,231

FLOW REGULATION DEVICE FOR WASTE WATERS

Rodolfo Filippi, Morges, Switzerland, assignor to Rentham Limited, England

Filed Aug. 24, 1982, Ser. No. 411,102

Claims priority, application Switzerland, Sep. 1, 1981, 5619/82

The portion of the term of this patent subsequent to Dec. 14, 1999, has been disclaimed.

Int. Cl.³ B01D *21/00*

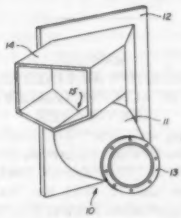
U.S. Cl. 210—519 **8 Claims**

1. A flow regulation device for receiving mixed water con-

taining both clean rain water and polluted waste water and for separating said clean rain water from said waste water, said flow regulating device comprising:

a collection chamber having a first, inlet opening for receiving said mixed water, a second, outlet opening for discharging a portion of said mixed water which has a relatively high content of waste, and a third, outlet opening for discharging a portion of said mixed water which is mainly clean rain water;

a reduction adapter including a tapered cylinder having a smaller and a larger diameter end, said larger diameter end corresponding to the diameter of a supply duct which supplies said mixed water to said first inlet opening, said reduction adapter also including an overflow member connected to the upper portion of said tapered cylinder for permitting relatively clean excess water passing into said reduction adapter to flow through said overflow member and into said collection chamber; and



a waste-weir including a single piece tubular member having an entrance end and an exit end, said entrance end being connected to said smaller diameter end of said tapered cylinder, said exit end being coupled to said second opening in said collection chamber, said tubular member including a first baffled zone for imposing an S-shaped path onto the flow of said mixed water as it moves downstream from said entrance end to said exit end of said tubular member and a second baffled zone for separating said portion of said mixed water which has a relatively high content of waste from surplus mixed water entering said tubular member and having a high content of clean rain water, an opening formed in the top of said tubular member through which said surplus mixed water having a high content of clean rain water can exit from said tubular member into said collection chamber; and

means for guiding said relatively clean water which has entered said collection chamber to said third outlet opening in said collection chamber.

4,455,232

METHOD AND APPARATUS FOR INDUCED-FLOW CIRCULATION AND PRESSURIZED AERATION IN A BARRIER OXIDATION DITCH

John H. Reid, 7 Stansbury Ct., Fredericksburg, Va. 22401

Continuation-in-part of Ser. No. 75,412, Sep. 14, 1979, Pat. No. 4,394,268, Ser. No. 28,383, Apr. 9, 1979, Pat. No. 4,278,547, Ser. No. 282,592, Jul. 13, 1981, Ser. No. 848,705, Nov. 4, 1977, abandoned, Ser. No. 355,150, Mar. 5, 1982, Ser. No. 957,432, Nov. 3, 1978, Pat. No. 4,260,486, and Ser. No. 28,386, Apr. 9, 1979, which is a continuation of Ser. No. 649,995, Jan. 19, 1976, abandoned. This application Mar. 24, 1982, Ser. No. 361,205

Int. Cl.³ C02F *3/20*

U.S. Cl. 210—628 **14 Claims**

14. A method for providing induced flow of mixed liquor and pressurized aeration of both directly pumped liquor and said induced-flow liquor in a barrier oxidation ditch having a sealably attached barrier athwart its endless channel, to separate upstream liquor within an intake channel from downstream liquor within a discharge channel, and having a deep oxygen contact duct, connecting said intake channel to said discharge channel which is disposed beneath said barrier, said method comprising the following steps:

A. providing a directly pumped central liquor inlet which is in flow communication with said intake channel and with said contact duct;

B. providing an induced-flow liquor inlet which is in flow communication with said intake channel and said contact duct and is in surrounding relationship to said central liquor inlet;

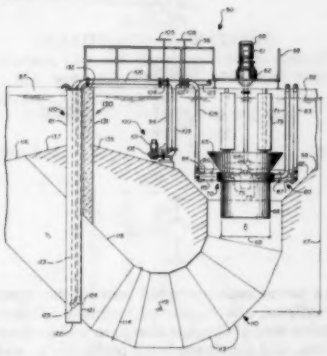
C. providing a downdraft propeller which is rotatably and coaxially mounted to said central liquor inlet;

D. pumping said upstream liquor downwardly with said downdraft propeller from said intake channel into said deep oxygen contact duct to create directly pumped liquor entering said contact duct;

E. providing:

(1) a compressed air supply means,

(2) an air sparge means which is disposed beneath said propeller and is flow connected to said compressed air supply means, and



(3) an air diffuser means which is disposed within said induced-flow liquor inlet and is in flow communication with said compressed air supply means;

F. selectively admixing diffused air from said air sparge means and said air diffuser means with at least one of said directly pumped liquor and said induced-flow liquor to create a combined liquor-air mixture within said contact duct; and

G. moving said combined liquor-air mixture through said contact duct, wherein said pressurized aeration occurs by homogeneous aeration of both said induced-flow liquor and said directly pumped liquor with said diffused air, and into said discharge channel as aerated mixed liquor which flows translationally, while the dissolved oxygen content thereof is consumed, through said endless channel and piles up against said barrier with dammed-up momentum, whereby kinetic energy is available to provide said induced flow.

4,455,233

METHOD AND APPARATUS FOR ION ANALYSIS AND DETECTION USING REVERSE MODE SUPPRESSION

Christopher A. Pohl, Hayward; Rosanne W. Slingsby, Pleasanton; Edward L. Johnson, Milpitas, and Leilani Angers, Santa Clara, all of Calif., assignors to Dionex Corporation, Sunnyvale, Calif.

Filed Aug. 12, 1983, Ser. No. 522,829

Int. Cl.³ B01D *15/08*

U.S. Cl. 210—635 **18 Claims**

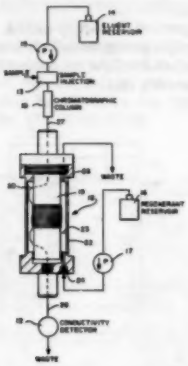
1. A method of ion analysis and detection comprising:

(a) eluting at least two weak ionic species to be determined past a chromatographic separation medium in an eluent to

separate said ionic species, said ionic species being all of positive or negative charge and being in the form of weakly dissociated acids or bases or salts of weakly dissociated acids or bases, and, after separation, being in the form of acids or bases, said eluent comprising the hydronium or hydroxide form of co-ions of the same charge as said ionic species; and

(b) containing the effluent from said separation medium with one side of an ion-exchange membrane having exchangeable ions of an opposite charge to said ionic species and being permeable to ions of the same charge as said exchangeable ions, and which resists permeation through the membrane of ions of opposite charge; and

(c) simultaneously with step (b) contacting the opposite side of said membrane with a regenerant, said membrane forming a permselective partition between the regenerant and the effluent, said regenerant including salt-forming suppression ions of opposite charge to said ionic species and co-ions, said membrane being permeable to said suppression ions and to corresponding hydronium or hydroxide ions, said suppression ions being capable of forming suppressed salts with said co-ions of substantially lower equivalent conductance than the corresponding hydronium or hydroxide form of said co-ions, whereby hydronium or hydroxide ions extracted from the effluent at the ion-exchange sites of the membrane are diffused through the membrane into the regenerant and said suppression ions are diffused from the regenerant into the effluent to form the suppressed salt; and



(d) then detecting said separated ionic species.

4,455,234

PROCESS OF EXTRACTING A METAL VALUE

David Markham, Maidenhead; Clifford G. Brown, Leatherhead, and John M. Simon, Chessington, all of England, assignors to Michigan State University, East Lansing, Mich.

Filed Sep. 29, 1982, Ser. No. 427,786

Claims priority, application United Kingdom, Sep. 29, 1981, 8129427; Sep. 29, 1981, 8129428

Int. Cl.³ C02F 3/08

U.S. Cl. 210—638 **17 Claims**

1. A continuous extraction process comprising the steps of:

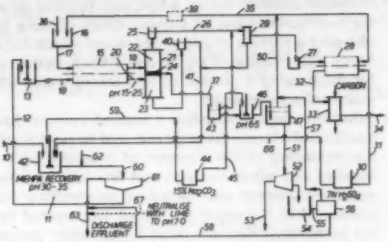
(a) contacting an aqueous feed stream containing a value to be extracted with an organic solvent containing an extractant for said value, said extractant being at least partially water soluble;

(b) thereby forming an organic phase and an aqueous phase;

(c) removing in said organic phase a complex of said extractant and said value;

(d) recycling at least a part of said aqueous phase containing dissolved extractant,

(e) forming a mixture of said recycled aqueous phase with an aqueous input stream containing the value to be extracted, whereby said mixture forms said feed stream and includes recycled and recovered dissolved extractant and



(f) dewatering said mixture before the mixture is contacted with said organic solvent.

4,455,235

SCALE INHIBITION METHOD EMPLOYING (METH)ACRYLIC ACID/METHALLYLSULFONATE COPOLYMER

Jean Boutin, Mions, and Jean Neel, Lyons, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Division of Ser. No. 267,754, May 28, 1981, abandoned. This application Mar. 11, 1983, Ser. No. 474,563

Claims priority, application France, Jun. 9, 1980, 80 12741

Int. Cl.³ C02B 5/06

U.S. Cl. 210—701 **6 Claims**

1. A method for inhibiting the formation of scale in an aqueous environment, comprising adding thereto a scale-inhibiting amount of a water-soluble addition copolymer comprising (i) both recurring acrylic acid units and recurring methacrylic acid units, and (ii) a minor amount of recurring alkali metal methallylsulfonate units, the amount by weight of said recurring methallylsulfonate units (ii) in said copolymer being less than 20% of the total amount of said recurring acrylic acid and recurring methacrylic acid units (i) therein.

4,455,236

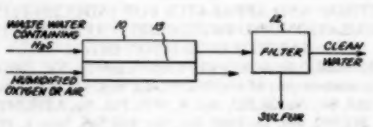
METHOD FOR REMOVING HYDROGEN SULFIDE FROM AQUEOUS STREAMS

Bang M. Kim, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 20, 1982, Ser. No. 450,867

Int. Cl.³ C02F 1/72

U.S. Cl. 210—721 **11 Claims**



1. A method for removing hydrogen sulfide from waste water and other aqueous solutions, comprising:

passing said solution through a vessel containing at least one redox resin material having a high oxidation state, so as to contact said solution with said resin material said redox resin material comprising a membrane dividing said vessel into two volumes said solution being passed through a first of said volumes;

passing an oxygenated fluid through the second of said volumes so as to contact said membrane and to increase the oxidation state of said redox resin.

4,455,237

HIGH BULK PULP, FILTER MEDIA UTILIZING SUCH PULP, RELATED PROCESSES

Homan B. Kinsley, Powhatan, Va., assignor to James River Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 337,158, Jan. 5, 1982. This application Oct. 14, 1982, Ser. No. 434,266

The portion of the term of this patent subsequent to Jun. 19, 2001, has been disclaimed.

Int. Cl.³ B01D *39/18;* D21F *11/14*

U.S. Cl. 210—767 **15 Claims**

1. An improved, high bulk, fibrous filter material for the filtration of fluid media comprising

(a) a substantial fraction of lignin-containing fibers derived from the disc refining in substantially dry condition of substantially undelignified lignin-containing material having a lignin content of at least 10%, under steam pressures in the range of about 90 psig to about 120 psig, at temperatures in the range of from about 330° F. to about 350° F., and using energy levels in the range of from about 8 to about 35 HPD/ADT,

(b) said lignin-containing fibers being characterized by having most of their original lignin content and by having a smooth wall structure, substantially free of fiber-bonding surface fibrils being substantially non-self-bonding to adjacent like fibers in the absence of elevated temperatures, and having a freeness of at about 725 ml (CSF), and

(c) said fibrous material being formed into a random-laid sheet-like structure having a dust capacity of at least about 1460 g/kg.

11. In a process of filtration of a liquid or gaseous medium comprising passing the liquid or gaseous medium to be filtered through filter media, the improvement which comprises

a. passing the liquid or gaseous medium through a random-laid sheet-like mass of high bulk, fibrous filter material which comprises a substantial fraction of lignin-containing fibers derived from the disc refining in a substantially dry state of substantially undelignified lignin-containing material having a lignin content of at least 10%, under steam pressures in the range of about 90 psig to about 120 psig, at temperatures in the range of from about 330° F. to about 350° F., and using energy levels in the range of from about 8 to about 35 HPD/ADT,

b. said lignin-containing fibers being characterized by having most of their original lignin content, by having a smooth wall structure, substantially free of fiberbonding surface fibrils and being substantially non-self-bonding to adjacent like fibers in the absence of elevated temperature, and

c. said lignin-containing fiber fraction having a pulp freeness of at least about 725 (CSF).

4,455,238

APPARATUS AND METHOD FOR FILTRATION OF A MOLTEN METAL STREAM

Daniel E. Groteke, 1228 Ridge Cliff Rd., Cincinnati, Ohio 45215, assignor to Daniel E. Groteke, Cincinnati, Ohio

Filed Apr. 14, 1982, Ser. No. 368,158

Int. Cl.³ C22B *9/02*

U.S. Cl. 210—773 **12 Claims**

1. An apparatus for intersecting and filtering a stream of molten metal, comprising:

a vessel having sidewalls which attach to a bottom;

an outlet passage through said bottom;

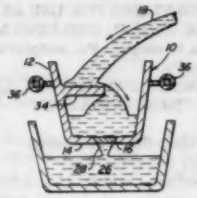
a filter element fitted to said outlet passage; and

means within said vessel for dampening the momentum of the molten metal stream wherein said means for dampening the momentum of the molten metal stream being positioned so as to intercept the molten metal stream before said molten metal stream contacts said filter element.

10. A method for filtering a molten metal stream discharged from a melting furnace comprising:

directing the molten metal stream onto a surface within a vessel to dissipate the momentum of the molten metal stream;

collecting the molten metal from said surface in said vessel;



passing said collected molten metal through a filter element which is an integral part of said vessel; and

collecting said molten metal in a ladle.

4,455,239

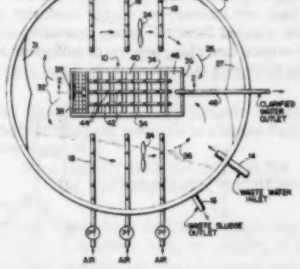
CLARIFICATION OF FLUIDS

Jerry D. Morrow, Leawood, Kans., and Paul L. Andrews, Kansas City, Mo., assignors to Burns & McDonnell Engineering Company, Inc., Kansas City, Mo.

Filed Sep. 27, 1983, Ser. No. 535,558

Int. Cl.³ B01D *21/02*

U.S. Cl. 210—802 **25 Claims**



1. An apparatus for clarifying fluids in a fluid container, the combination comprising:

first means, for defining a quiescent zone in the container, said first means including a pair of end walls, a pair of side walls, a bottom wall comprising at least one surface having open and closed areas to permit settled solids to pass out of said quiescent zone and means to introduce fluid containing suspended solids into said quiescent zone;

second means, located below said first means, for defining a fluid flow path below and in communication with said bottom wall,

said second means having an opening at each end to form an inlet and an outlet,

said second means being bounded on the top by the bottom wall of said first means and closed on the bottom and sides thereof,

pump means, located substantially adjacent to said outlet of said second means, for creating a low pressure area at said outlet, thereby causing the fluid to flow into said inlet, along said flow path, at least a portion thereof out of said outlet, and causing settled solids to pass through said open areas from said quiescent zone into said flow path, and

third means, located in said first means, for removing clari-

fied fluid from the top of said first means and from the fluid container.

4,455,240

AMPHOLYTIC POLYMERS FOR USE AS FILTRATION CONTROL AIDS IN DRILLING MUDS

Christine A. Costello, Coraopolis, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

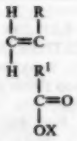
Filed Dec. 15, 1981, Ser. No. 331,101
Int. Cl.³ C09K 7/02
U.S. Cl. 252—8.5 C 14 Claims

1. An aqueous drilling fluid comprising:

(a) an aqueous clay dispersion; and

(b) a water loss reducing amount of a carboxylic functional polyampholyte, or the salt thereof, having an intrinsic viscosity of at least 0.5 dl/g, prepared from:

(i) at least one carboxylic functional monomer; of the formula:



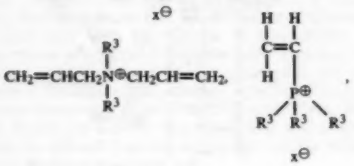
wherein

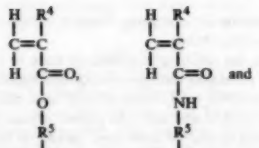
R is hydrogen, a phenyl group or an alkyl group of from 1 to 3 carbon atoms,

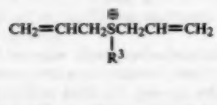
R^1 is a branched or straight chain of from 0 to 12 carbon atoms, and

X is hydrogen or an alkali or alkaline earth metal

(ii) at least one cationic-containing monomer containing an ion selected from the group consisting of a quaternary ammonium, phosphonium or sulfonium having one of the following structures:







wherein

R^3 is a phenyl or an alkyl group of from 1 to 3 carbon atoms,

R^4 is a hydrogen or an alkyl group of from 1 to 3 carbon atoms,

R^5 is a straight or branched chain of from 1 to 12 carbon atoms, and

X is an anion; and

(iii) optionally, non-ionic monomer.

4,455,241

WELLBORE FLUID

Billy L. Swanson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 16, 1982, Ser. No. 349,277
Int. Cl.³ E21B 21/04; C09K 7/04
U.S. Cl. 252—8.55 R 20 Claims

1. A method for producing wellbore fluids which comprises combining aqueous clay-free wellbore fluids having densities ranging from about 11 to about 15 lb/gal with a water-loss improving amount of an additive selected in the group consisting of

(a) $NaHCO_3$

(b) $NaHCO_3$ and Na_2CO_3 and

(c) Na_2CO_3 and an organic polycarboxylic acid or polycarboxylic acid anhydride.

4,455,242

REDUCING THE CLOUD POINT OF HYDRODEWAXED BASE STOCKS

Richard S. Herd, and Phillip S. Landis, both of Woodbury, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 10, 1983, Ser. No. 456,879
Int. Cl.³ C10M 1/38, 1/54
U.S. Cl. 252—40.7 10 Claims

1. A method for lowering the cloud point and/or improving the haze-forming characteristics of a hydrodewaxed mineral oil base stock which comprises reacting sulfur with said base stock in sufficient quantity to provide from about 0.10% to about 1.0% by weight of sulfur therein and adding a sufficient amount of this sulfurized stock to an unreacted mineral oil base stock such that the concentration of sulfur in the total composition is from about 0.01% to about 0.20% by weight.

4,455,243

SUCCINIMIDE COMPLEXES OF BORATED FATTY ACID ESTERS OF GLYCEROL AND LUBRICATING OIL COMPOSITIONS CONTAINING SAME

Thomas V. Liston, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 24, 1983, Ser. No. 469,500
Int. Cl.³ C10M 1/26, 1/32
U.S. Cl. 252—49.6 16 Claims

1. A composition comprising a complex prepared by reacting a borated fatty acid ester of glycerol or mixtures thereof and an oil soluble alkyl or alkenyl succinimide at 25° C. to 200° C. wherein the wt% ratio of succinimide to borated fatty acid ester of glycerol to form the complex is in the range of 0.5:1 to 3:1.

4,455,244

OXIDIZED MANNICH CONDENSATION PRODUCT

Granville L. Smyser, Plainfield, and John A. Cengel, Wheaton, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 7, 1982, Ser. No. 385,457
Int. Cl.³ C10M 1/32
U.S. Cl. 252—51.5 R 10 Claims

1. Oxidized Mannich condensation product of an oxidized olefin polymer, primary or secondary amine and formaldehyde yielding reactant.

4,455,245

FLOCCULATING REAGENT

Pearl M. Klein, c/o Rosario Dominicana, S.A., P.O. Box 944, Santo Domingo, Dominican Republic

Division of Ser. No. 350,372, Feb. 19, 1982, Pat. No. 4,415,458. This application Jul. 22, 1983, Ser. No. 516,336

Int. Cl.³ C09K 3/00

U.S. Cl. 252—60 10 Claims

1. A flocculating reagent which comprises an extract selected from the group consisting of:

(a) orange peel extract,

(b) corn husk extract, and

(c) a mixture of orange peel extract and corn husk extract.

4,455,246

HEAT INSULATION MIXTURE

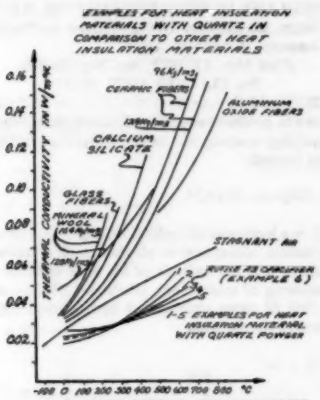
Sabine Schmidt; Peter Kleinschmit, both of Hanau; Rudolf Schwarz, Alzenau, and Rainer Domesle, Maintal, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 28, 1982, Ser. No. 383,212

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1981, 3125785

Int. Cl.³ C04B 43/00

U.S. Cl. 252—62 36 Claims



1. A heat insulation mixture containing quartz powder as an opacifier.

4,455,247

COMPOSITION FOR USE IN AN ABSORPTION REFRIGERATION SYSTEM

Toshio Nakayama, and Takeshi Kanai, both of Gunma, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

PCT No. PCT/JP81/00026, 371 Date Oct. 9, 1981, 102(e) Date Oct. 9, 1981, PCT Pub. No. WO81/02301, PCT Pub. Date Aug. 20, 1981

PCT Filed Feb. 9, 1981, Ser. No. 314,083

Claims priority, application Japan, Feb. 12, 1980, 55-16315

Int. Cl.³ C09K 5/04

U.S. Cl. 252—67 18 Claims

1. A composition for use in an absorption refrigeration system comprising at least one refrigerant, said at least one refrigerant comprising a fluorinated alcohol having 2 to 10 carbon atoms, being a liquid at ordinary room temperature and being vaporizable under normal atmospheric or reduced pressure when heated, and at least one absorbent, said at least one absorbent having a higher boiling point at normal atmospheric pressure than the refrigerant and being capable of absorbing the refrigerant, and comprising an electron donative compound selected from the group consisting of ethers, esters, polyols, amides, amines, imides, ketones, aldehydes and nitriles.

4,455,248

ANTIFREEZE COMPOSITIONS

Donald L. Wood, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 383,888, Jun. 1, 1982, abandoned. This application Oct. 31, 1983, Ser. No. 546,081

Int. Cl.³ C09K 5/00; F28F 23/02

U.S. Cl. 252—75 16 Claims

1. A single-phase glycol antifreeze composition which comprises one or more glycols selected from the group consisting of ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol and glycerol and additionally comprising for every 100 parts by weight of said glycol: (a) between about 0.1 and 500 parts by weight water, about 0.10 parts by weight of sodium metasilicate, (b) between about 1.6 and 2.2 parts by weight of a phosphate of potassium, (c) between about 0.15 and 0.50 parts by weight of a compound selected from the group consisting of sodium metaborate and sodium tetraborate, (d) between about 0.10 and 0.40 parts by weight of sodium nitrate, (e) an effective copper corrosion inhibiting amount of a compound selected from the group consisting of tolyltriazole, benzotriazole, and mercaptobenzothiazole, and (f) a quantity of alkali sufficient to provide a pH for the composition of between about 9 and 11.5.

4,455,249

STABILIZED BLEACH AND LAUNDERING COMPOSITION

Guy Broze, Grace-Hollogne, and Leopold Laitem, Orp-Le-Grand, both of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 21, 1982, Ser. No. 435,794

Int. Cl.³ C11D 3/395, 7/54

U.S. Cl. 252—95 12 Claims

1. A particulate bleaching detergent comprising:

(a) from about 2 to about 50%, by weight, of a bleaching agent comprising a peroxyacid compound and/or a water-soluble salt thereof;

(b) from about 0.1 to about 5%, by weight, of a polymer containing monomeric units of the formula

wherein R_1 and R_2 independently represent hydrogen or an alkyl group containing from 1 to 3 carbon atoms, and M represents hydrogen, or an alkali metal, an alkaline earth metal or ammonium cation;

(c) from about 3 to 50%, by weight, of at least one detergent surface active agent selected from the group consisting of anionic, cationic, nonionic, ampholytic and zwitterionic detergents;

(d) from about 0 to about 10%, by weight, of a non-polymeric sequestering agent; and

(e) from about 1 to about 60%, by weight, of a detergent builder salt other than that defined in (b) and (d); and

(f) the balance comprising water and optionally filler salts.

4,455,250

STABLE LIQUID HARD SURFACE CLEANSER COMPOSITION CONTAINING DGH AND A QUATERNARY GERMICIDE

Charles Frazier, Kinnelon, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 224,605, Jan. 12, 1981, abandoned. This application Apr. 28, 1982, Ser. No. 372,770
Int. Cl.³ C11D 1/835, 3/48
U.S. Cl. 252—106 10 Claims

1. A germicidally effective, stable aqueous alcoholic hard surface cleaner composition comprising from about 1 to 10 percent, by weight, of a nonionic surfactant having a Hydrophile-Lipophile Balance in the range of about 12.5 to 14, from about 2.5 to 4 percent, by weight, of a germicide consisting of (a) n-dodecylguanidinium hydrochloride and (b) one or more dialkyldimethyl ammonium chlorides, wherein the alkyl groups are independently about C_8 to C_{12}, the ratio of (b) to (a) being at least about 1:1 to about 3:1.

4,455,251

AQUEOUS SOLUTION OF ALKALI METAL COMPOSITIONS

William G. Wood, Grosse Pointe Farms, and John F. Pilznienski, Dearborn Heights, both of Mich., assignors to Kolene Corporation, Detroit, Mich.

Filed Sep. 20, 1982, Ser. No. 419,826
Int. Cl.³ C11D 7/06, 7/10
U.S. Cl. 252—156 16 Claims

1. An essentially saturated aqueous solution comprising at least one alkali metal hydroxide and at least one alkali metal nitrate, characterized in that it is liquid at 50° C. and has a viscosity sufficient to be sprayed to form droplets, and further being stable and free of precipitates between 50° C. and 110° C., whereby the solution can be spray added to a fused salt bath of a composition comparable to the solution without water.

4,455,252

PHLEGMATIZATION OF ORGANIC PEROXIDES BY METALLIC SOAPS

Kenneth B. Wylegala, Kenmore, N.Y.; James R. Fischer; Franklin A. Long, both of Claremont, Calif., and Deborah L. Golob, Pasadena, Calif., assignors to The Norac Company, Inc., Azusa, Calif.

Continuation of Ser. No. 150,755, May 19, 1980, abandoned. This application Jul. 22, 1981, Ser. No. 285,846
Int. Cl.³ C09K 15/06; C07C 73/00
U.S. Cl. 252—186.26 33 Claims

1. A phlegmatized organic peroxide composition consisting essentially of a liquid organic peroxide having a melting point below 50 C. and a metallic soap of higher fatty acid, said metallic soap being present in an amount sufficient to phlegmatize said peroxide and in an amount from 5 to 90% by weight based on total peroxide and metallic soap.

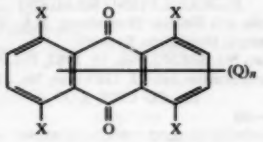
4,455,253

PLEOCHROIC ANTHRAQUINONE DYES

David J. Thompson, Manchester, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Feb. 24, 1982, Ser. No. 352,058
Claims priority, application United Kingdom, Feb. 25, 1981, 8105888; Feb. 25, 1981, 8105890; Sep. 30, 1981, 8129518
Int. Cl.³ C09B 1/58; C02F 1/13; C09K 3/34
U.S. Cl. 252—299.1 15 Claims

1. An anthraquinone dye free from water-solubilising and ionic substituents of the general formula:



wherein

Q is NH_2, C_1 to C_{20} alkyl, mono- or bi-carbocyclic aryl, NO_2 or halo;

n is 0 to 4;

each X independently is H, —SR, $—NZ_1Z_2$ or Q;

each R independently is C_1 to C_{20} alkyl, mono- or bi-carbocyclic aryl or C_4 to C_8 cycloalkyl;

Z_1 & Z_2 are independently H, C_1 to C_{20} alkyl, C_4 to C_8 cycloalkyl or mono- or bi-carbocyclic aryl;

provided that there are at least two different —SR groups and that where only two X's represent —SR groups at least one R is aryl and the two —SR groups are in the 1 & 5 or the 1 & 8 positions.

4,455,254

CYANOHYDROCARBYL SUBSTITUTED SULFONATES AND THEIR USE IN POST PRIMARY OIL RECOVERY

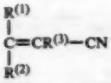
Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 17, 1982, Ser. No. 359,000
Int. Cl.³ G21B 43/22, 43/24
U.S. Cl. 252—8.55 D 22 Claims

1. Process to produce a cyanohydrocarbylated organo sulfonate comprising reacting one or more hydrocarbyl sulfonates having the formula

$$(R—CH_2—A—SO_3)_nM$$

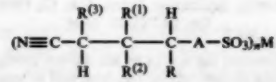
wherein R is a hydrocarbyl radical having 3–30 carbon atoms, A is an aromatic, alkenylene or alkylene radical having 6 to 30 carbon atoms, n is the valence of M, M is selected from the group consisting of ammonium, alkali and alkaline earth metals, with one or more unsaturated hydrocarbyl nitrile compounds having the formula



wherein $R^{(1)}$, $R^{(2)}$ and $R^{(3)}$ are hydrogen, aryl or alkaryl radicals with 6 to 10 carbon atoms or alkyl radicals with 1 to 5 carbon atoms, and wherein these radicals can be the same or different, to produce a cyanohydrocarbylated hydrocarbyl sulfonate product in the presence of a base and in the essential absence of water.

14. Process for hydrocarbon recovery from subterranean formation comprising

(a) injecting a surfactant comprising a cyanoalkylated hydrocarbon sulfonate having the formula



into said formation via at least one injection well, wherein A represents substituted or unsubstituted aromatic alkenylene or alkylene hydrocarbyl radical having 6 to 30 C-atoms or a valence bond, if A is an aromatic radical the sulfonate group being attached to the aromatic portion of this radical, n is the valence of M, $R^{(1)}$, $R^{(2)}$ and $R^{(3)}$ are

hydrogen, aryl or alkaryl radicals with 6 to 10 carbon atoms, or an alkyl radical of 1 to 5 carbon atoms, M stands for ammonium radical, alkali metal or alkaline earth metal atom, and R stands for a hydrocarbyl radical having 3 to 30 carbon atoms,

(b) causing the so injected surfactant system to move from the injection well towards one or more production wells displacing hydrocarbon present in said formation,

(c) recovering displaced hydrocarbon from at least one of said production wells.

4,455,255

CYANOHYDROCARBYLATED ALKOXYLATES AND GLYCERIDES

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 26, 1982, Ser. No. 371,865

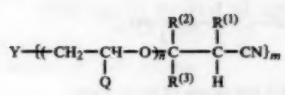
Int. Cl.³ E21B *43/22, 43/24;* C07C *120/00*

U.S. Cl. 252—8.55 D **21 Claims**

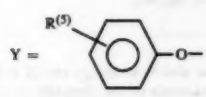
1. Surfactant composition comprising

(a) a metal hydrocarbyl sulfonate

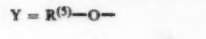
(b) a cyanohydrocarbylated alkoxy composition having the formula:



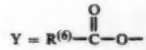
wherein m is 1 or 2, n is an integer of 1 to 40 and wherein Y has one of the following meanings:



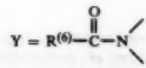
(m = 1)



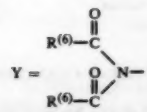
(m = 1)



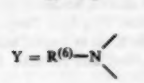
(m = 1)



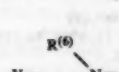
(m = 2)



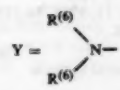
(m = 1)



(m = 2)



(m = 1)



and wherein

Q is hydrogen or methyl, $R^{(1)}$, $R^{(2)}$, $R^{(3)}$, which can be same or different, are hydrogen, aryl or alkaryl radicals with 6 to 10 carbon atoms, or alkyl radicals of 1 to 5 carbon atoms, $R^{(5)}$ and $R^{(6)}$ are aryl or alkaryl radicals with 6 to 10 carbon atoms or alkyl radicals with 1 to 5 carbon atoms.

4,455,256

BONE MORPHOGENETIC PROTEIN

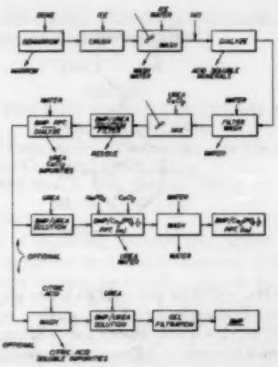
Marshall R. Urist, Pacific Palisades, Calif., assignor to The Regents of the University of California, Berkley, Calif.

Filed May 5, 1981, Ser. No. 260,726

The portion of the term of this patent subsequent to Oct. 13, 1998, has been disclaimed.

Int. Cl.³ C07G *7/00*

U.S. Cl. 260—112 R **20 Claims**



1. Bone morphogenetic protein (BMP) made by the process comprising the steps of:

(a) demineralizing bone tissue;

(b) treating said demineralized bone tissue under aqueous conditions with a water soluble neutral salt and a solubilizing agent for said BMP, said agent being selected from the group consisting of urea and guanidine, and thereby transforming the bone collagen to gelatin and extracting BMP into said solution of solubilizing agent; and

(c) separating said solubilizing agent and neutral salt from said solution, thereby precipitating BMP in the aqueous medium, and

said BMP has a molecular weight in the range of 1,000–100,000.

4,455,257

CATIONIC REACTION PRODUCT OF KRAFT LIGNIN WITH ALDEHYDE AND POLYAMINE

Henry W. Hoftiezer, Rothschild, Wis.; Daniel J. Watts, Kingston, N.J., and Akio Takahashi, Solebury, Pa., assignors to Reed Lignin, Inc., Greenwich, Conn.

Filed Oct. 12, 1982, Ser. No. 433,991

Int. Cl.³ C07G *1/00*

U.S. Cl. 260—124 R **12 Claims**

1. Cationic lignin derivative consisting essentially of the reaction product of kraft lignin which is substantially free from sulfonic acid groups with an aldehyde or an aldehyde-producing substance, and a polyamine.

4,455,258

DISAZO SULFOPHENYLPYRAZOLONE-SULFOSTILBENE DYES

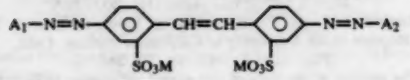
David A. Brode, Birdsboro, Pa., assignor to Crompton and Knowles Corporation, New York, N.Y.

Filed Dec. 24, 1981, Ser. No. 334,232

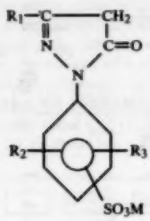
Int. Cl.³ C09B *33/02, 33/13;* D21H *3/80*

U.S. Cl. 260—160 **7 Claims**

1. A compound having the structure:



wherein A_1 and A_2 can be the same or different and represent the residue of a phenylpyrazolone compound having the following structure:



wherein:

R_1 is —CH_3, —COOH and —COO-lower alkyl,

R_2 and R_3 independently of one another represent —H, —lower alkyl, —lower alkoxy and —halogen; and

M represents the same or different water solubilizing cations.

4,455,259

PROCESS FOR RECOVERING ANIMAL HAIR GREASE

Ken Kazama, Kamakura; Ikuo Muramoto, Yokohama; Yoshinobu Kusunoki, Kyoto; Kenji Ozaki, Gifu, and Hideyuki Fujii, Oogaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha and Toa Wool Spinning & Weaving Co., Ltd., both of Osaka, Japan

Filed Sep. 29, 1982, Ser. No. 428,012

Claims priority, application Japan, Jan. 11, 1982, 57-1711

Int. Cl.³ C07J 9/00

U.S. Cl. 260—397.25 **18 Claims**

1. A process for recovering animal hair grease from a raw animal hair material comprising the steps of:

(A) providing a scouring waste liquid which is the product of the scouring of a raw animal hair material with a hydrophobic organic solvent and which contains a scouring extract from said raw animal hair material dissolved in said hydrophobic organic solvent,

(B) converting said scouring waste liquid to a flock forming liquid by the following operations which may be carried out in any sequence,

(a) adding water to said scouring waste liquid,

(b) adjusting the concentration of said scouring extract in said flock-forming liquid to 20% to 70% based on the entire weight of said flock-forming liquid,

(c) adjusting the content of water in said flock-forming liquid to 2% to 110% based on the weight of said scouring extract, and

(d) adjusting the temperature of said flock-forming liquid to 80° C. to 100° C.,

whereby flocks are formed in said flock-forming liquid;

(C) removing said flock from said flock-forming liquid, whereby a residual liquid containing therein purified animal hair grease is obtained; and

(D) recovering said animal hair grease from said residual liquid.

4,455,260

PREPARATION OF ALK-1-ENYL ISOCYANATES

Volker Schwendemann, Wiesenbach, and Karl-Heinz Koenig, Frankenthal, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

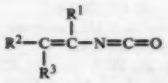
Filed Jan. 27, 1983, Ser. No. 461,468

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1982, 3205433

Int. Cl.³ C07C 118/00, 119/042

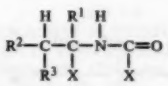
U.S. Cl. 260—453 P **6 Claims**

1. A process for the preparation of an alk-1-enyl isocyanate of the formula



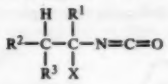
I

where R^1, R^2 and R^3 may be identical or different and are each hydrogen or methyl, wherein a 1-haloalkylcarbamyl halide of the formula



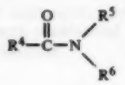
II

and/or a 1-haloalkyl isocyanate of the formula



III

where R^1, R^2 and R^3 have the above meanings and X is halogen, are reacted with a carboxamide of the formula



IV

where R^4 is hydrogen or an aliphatic or aromatic radical, and R^5 and R^6 may be identical or different and are each hydrogen or an aliphatic radical, or, together with the adjacent nitrogen atom, are members of a heterocyclic radical.

4,455,261

4-N-ALKYLBENZOYLOXY-3'-FLUORO-4'-CYANOBENZENES

Makoto Sasaki, Okegawa; Haruyoshi Takatsu, Kodaira; Hisato Sato, Tokyo; Tuneo Shimamura, Chiba; Kazuhisa Toriyama, and Tamihito Nakagomi, both of Mobara, all of Japan, assignors to Dainippon Ink and Chemicals, Inc. and Hitachi, Ltd., both of Tokyo, Japan

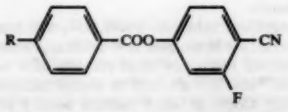
Filed Nov. 4, 1982, Ser. No. 439,192

Claims priority, application Japan, Nov. 11, 1981, 56-179618

Int. Cl.³ C07C 121/75; C09K 3/34

U.S. Cl. 260—465 D **7 Claims**

1. A compound represented by the general formula



wherein R represents a linear alkyl group having 1 to 10 carbon atoms.

4,455,262

PROCESS OF PRODUCTION OF ORGANIC DITHIO-ACIDS

Jean-Louis Detienne, Pau; Guy Levesque, Ballon, and Pierre Tozzolino, Morlaas, all of France, assignors to Societe Nationale Elf Aquitaine (Production), France

Filed Apr. 13, 1982, Ser. No. 368,037

Claims priority, application France, Apr. 15, 1981, 81 07629

Int. Cl.³ C07C *153/03*

U.S. Cl. 260—502.6 **11 Claims**

1. Process for the preparation of a dithioic organic acid from a corresponding ester, characterised in that the dithio-ester is reacted with the hydrosulphide of an alkali metal or alkaline earth metal in an anhydrous organic solvent which is an alcohol, an ether or an ether-alcohol in the presence of excess H_2S, and the reaction product is treated with a mineral acid.

4,455,263

ADHESIVE LATEX POLYMERIZATION SURFACTANTS

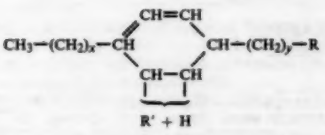
John W. Noble, Mt. Pleasant, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Mar. 15, 1983, Ser. No. 475,597

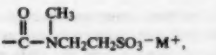
Int. Cl.³ C08L *93/00*

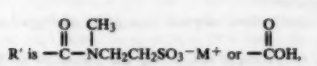
U.S. Cl. 260—503 **3 Claims**

1. A compound of the formula



where x and y are integers from 3 to 9, x and y together equal 12, R is





and M^+ is an alkali metal, ammonium or amine cation.

4,455,264

PREPARATION OF ACYL CYANIDES

Kurt Findeisen, Odenthal, and Eckart Kranz, Wuppertal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 22, 1982, Ser. No. 436,094

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1981, 3144792; Jul. 15, 1982, 3226425

Int. Cl.³ C07C *120/00, 121/34, 121/76*

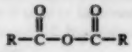
U.S. Cl. 260—545 R **10 Claims**

1. A process for the production of an acyl cyanide of the formula

in which

R is an optionally substituted alkyl group having 1 to 8 carbon atoms, an optionally substituted cycloalkyl group having 3 to 12 carbon atoms or an optionally substituted aryl group, or an optionally substituted 5-membered or 6-membered heterocyclic radical which additionally can be fused to a benzene ring,

comprising reacting a carboxylic acid anhydride of the formula



with trimethylsilyl cyanide of the formula $(CH_3)_3Si—CN$ at a temperature between about 50° and 250° C.

4,455,265

STABILIZER FOR LOW AMMONIA NATURAL RUBBER LATEX COMPOUNDS

Janice L. Haldeman, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 3, 1982, Ser. No. 354,336

Int. Cl.³ C08C *1/02*

U.S. Cl. 524—145 **10 Claims**

1. A method of improving the chemical stability of a low ammonia natural rubber latex which comprises adding from about 0.1 to about 0.5 parts by weight solids per 100 parts by weight of natural rubber solids of a neutralized or partially neutralized anionic phosphate surfactant having a pH of from about 4.0 to about 12.0 in a 20 percent aqueous solution, wherein said surfactant is neutralized with KOH or NH_4OH and wherein prior to neutralization said surfactant at an 80 percent solids aqueous solution had a Brookfield viscosity at 25° C. of 8,000 centipoises, a specific gravity at 25° C. of 1.18, a pour point of 35° F. and a pH as measured in a 5 percent aqueous solution of 1.3 to 2.0.

6. A method of improving the chemical stability of a low ammonia natural rubber latex based prevulcanized dipping compound which comprises adding to said compound from about 0.1 to about 0.5 parts by weight solids per 100 parts by weight of natural rubber solids of a neutralized or partially neutralized anionic phosphate surfactant having a pH of from about 4.0 to about 12.0 in a 20 percent aqueous solution, wherein said surfactant is neutralized with KOH or NH_4OH and wherein prior to neutralization, said surfactant at an 80 percent solids aqueous solution had a Brookfield viscosity at 25° C. of 8,000 centipoises, a specific gravity at 25° C. of 1.18, a pour point of 35° F. and a pH as measured in a 5 percent aqueous solution of 1.3 to 2.0.

4,455,266

CARBURETOR FOR INTERNAL COMBUSTION ENGINES, ESPECIALLY VERY SMALL PORTABLE ENGINES

Reinhard Gerhardy, Korb, Fed. Rep. of Germany, assignor to Firma Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Jul. 9, 1982, Ser. No. 396,742

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1981, 3127516

Int. Cl.³ F02M *17/04*

U.S. Cl. 261—35 **8 Claims**

1. A carburetor for an internal combustion engine such as a small portable engine or the like, the engine having a crankcase housing, an intake pipe communicating with a combustion chamber of the engine, and a fuel supply line connected to a fuel pump, the carburetor comprising:

a carburetor housing including: a control chamber connected to said fuel supply line and inlet passages extending from said control chamber to said intake pipe;

inlet valve means for controlling fuel from said fuel pump to said control chamber, said inlet valve means being biased in the closed position;

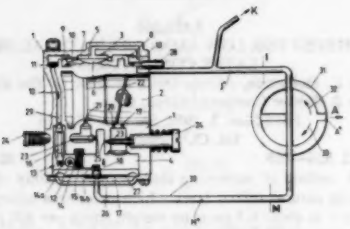
membrane means associated with said carburetor housing for delimiting said control chamber and actuating said

valve means in response to pressure pulses from said crankcase housing;

change-over valve means movable between a first position for causing said membrane means to communicate with the atmosphere and a second position for causing said membrane means to communicate with said crankcase housing thereby subjecting said membrane means to the pressure pulses generated in said crankcase housing;

biasing means for biasing said change-over valve means into said first position;

throttle means for adjusting the flow of air and fuel through said intake pipe;



actuating means operatively connecting said throttle means to said change-over valve means for actuating said change-over valve means to move the same from said first position to said second position as said throttle means is moved to accelerate said engine from start or no-load speed to full-load speed whereby pressure pulses are transmitted to said membrane means from said crankcase housing thereby actuating said inlet valve means to supply fuel to said control chamber sufficient to improve the fuel-air mixture supplied to the engine during acceleration; and,

said actuating means involving further means to prevent said change-over valve means from being actuated when said throttle means is moved to return the operation of the engine to said no-load speed.

4,455,267

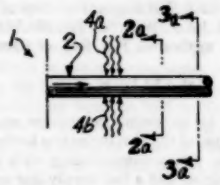
FABRICATION OF BIREFRINGENT ELECTROMAGNETIC TRANSMISSION LINE

Virgil H. Strahan, Orange; Kenneth A. James, Corona del Mar, and William H. Quick, La Habra Heights, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 174,088, Jul. 31, 1980, Pat. No. 4,372,646. This application Nov. 12, 1982, Ser. No. 440,917

Int. Cl.³ G02B 5/14, 5/172

U.S. Cl. 264—1.3 **13 Claims**



10. A method for fabricating a birefringent optical fiber in which birefringence is produced geometrically, said method comprising the steps of:

heating a rod formed of substantially pure, optically transmissive material,

drawing the rod into an elongated fiber,

irradiating the fiber with atomic particles during the last-mentioned drawing step and implanting ions therewithin for providing core and cladding sections, and

forming a particular index of refraction altered region of radiation induced damage having an oblong-shaped cross-section in said fiber for causing the respective profiles of the indices of refraction along two orthogonal axes of said fiber to be different from one another, said radiation damaged region producing internal strain within said fiber, whereby to cause said fiber to become permanently birefringent.

4,455,268

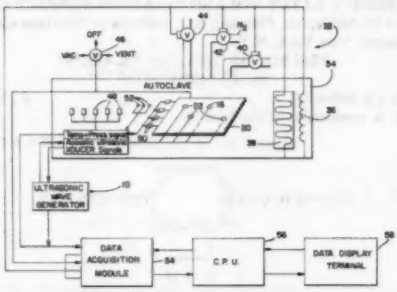
CONTROL SYSTEM FOR PROCESSING COMPOSITE MATERIALS

Richard J. Hinrichs, Cerritos, and Judy M. Thuen, Capistrano Beach, both of Calif., assignors to Applied Polymer Technology, Inc., Carlsbad, Calif.

Filed Jul. 9, 1981, Ser. No. 281,877

Int. Cl.³ B29G 7/00

U.S. Cl. 264—23 **5 Claims**



1. A method of curing a structure formed of fiber-reinforced composite materials and the like in an autoclave, comprising the steps of:

measuring the ambient temperature in said autoclave;

measuring the ambient pressure in said autoclave;

measuring the temperature on the surface of said structure being cured;

measuring the time elapsed during the curing of said structure;

at least periodically comparing the measured ambient temperature with an ambient temperature value selected for a measured elapsed time from a predetermined ambient temperature versus time curve;

at least periodically comparing the measured structure surface temperature value with a structure surface temperature value selected for a measured elapsed time from a predetermined structure surface temperature versus time curve;

regulating the amount of heat supplied to said autoclave to bring the measured ambient and structure surface temperatures within predetermined variances from said selected values;

at least periodically determining the instantaneous viscosity of the structure;

at least periodically comparing the determined viscosity with a reference viscosity;

setting a reference pressure value as a function of the outcome of the comparison between the determined viscosity and the reference viscosity;

comparing the ambient pressure in said autoclave with said reference pressure value; and

regulating the ambient pressure in said autoclave to bring the measured ambient pressure within a predetermined variance from said reference pressure value.

4,455,269

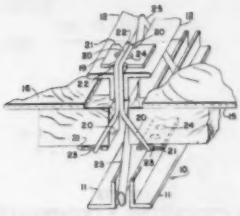
DEVICE AND METHOD FOR FORMING IN SITU HORIZONTAL CONCRETE SLABS

Alfred B. Spamer, and William J. Klueber, both of 1740 Joppa Rd., Baltimore, Md. 21234

Continuation of Ser. No. 34,969, May 1, 1979, abandoned. This application Mar. 27, 1981, Ser. No. 248,501

Int. Cl.³ E04G *11/50*

U.S. Cl. 264—31 1 Claim



1. A method of in situ forming cast horizontal concrete slabs which employs form boards, a plurality of joists, each having at least a pair of spaced top bar elements forming a substantially continual slot and a bottom bar element, and having a zig zag web member periodically connecting between the said top and bottom bar elements, along the length thereof, the steps of:

orienting a plurality of said joists in a generally parallel spaced relation, with their opposite ends supported substantially level,

inserting deformable aperture members for supporting a bar in spaced relation within said slot formed by the upper rails of said joists, and depending and spaced substantially below said spaced top bar elements

deforming said deformable aperture members and inserting thru said aperture members the ends of spanner bars, having transversely extended notched wing tabs at spaced intervals for defining notches, said spanner bars depending from the supporting aperture members of at least two adjacent joists, said bars spanning the distance therebetween, generally set at right angles thereto,

releasing said deformable aperture member for locking said notches into said aperture members, and

placing rigid panels having at least two opposite deformable edges tightly against the side of the webing apertures of said joists and of said aperture members supporting said spanner bars at a ratio of at least two bars per panel, and filling substantially all the horizontal space and surrounding all of the upper portion of the adjacent joists, with concrete.

4,455,270

CONSTRUCTION PROCESS INCLUDING SLAB SLIDING SUPPORT AND COMPRISING SIMULTANEOUS WALL ERECTION

Rene A. O'Cadiz Castaneda, Hamburgo No. 322-J, Col. Juarez, Mexico, 6 D.F., Mexico, assignor to Rene Alejandro O'Cadiz-Castaneda, Mexico, Mexico

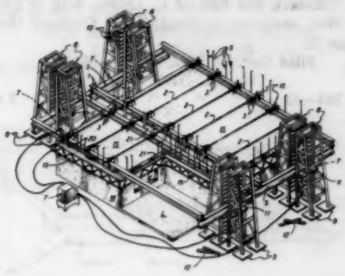
Filed May 27, 1981, Ser. No. 267,491

Claims priority, application Mexico, Dec. 3, 1980, 185014

Int. Cl.³ E04B *11/16*

U.S. Cl. 264—33 7 Claims

1. A process of constructing a building utilizing slab sliding and support means while simultaneously erecting walls, wherein the process includes the steps of constructing roof or flat floor slabs with spaces at any desired location defining the location of internal walls and further spaces defining the location of external walls, providing the flat slabs with connecting means and coupling said connecting means to a series of elevation transmitters, connecting said elevation transmitters to a series of secondary elevation means which in turn are connected to two main elevating means for raising and lowering said slabs, said main elevating means being positioned upon supports adjacent and outside the construction, connecting said main elevating means to an energy source, raising one of said slabs and locating sliding internal and external falsework in registry with said space therebelow, lowering the slab and sliding falsework integrated thereto until the lower edge thereof is in contact with the floor, casting the external and



internal walls of a first storey, curing the cast walls to an adequate strength, repeating the foregoing steps for each storey to be constructed until the maximum designed height of the building is reached, joining projecting wall and slab reinforcements, disconnecting the supports after after the concrete for the last storey has been cast and set to impart the designed strength and rigidity to the building and thereafter dismounting non incorporated construction aids.

4,455,271

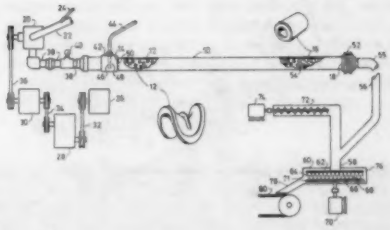
FOAMED GYPSUM WALLBOARD

Robert M. Johnson, Kenmore, N.Y., assignor to National Gypsum Company, Dallas, Tex.

Continuation of Ser. No. 303,265, Sep. 17, 1981, abandoned. This application Feb. 1, 1983, Ser. No. 462,755

Int. Cl.³ B32B *5/20*

U.S. Cl. 264—42 8 Claims



1. The continuous method of making lightweight gypsum wallboard in which a stable foam is continuously produced by forming air bubbles in an aqueous solution of a surface active agent, comprising the steps of continuously admixing a surface active agent with a major portion of the water to be used in forming said gypsum wallboard, continuously adding air to said mixture, subjecting the said mixture to a turbulent flow agitation by moving said surface active agent, said water and said air through a tubular chamber, which is free of any power-consuming agitating mechanisms, but which is substantially filled with static fill consisting of substantially uniform size, wear resistant water flow diverting elements causing the air in said mixture to become finely subdivided by its being passed around said flow diverting elements, and subsequently admixing finely ground calcined gypsum with the stable foamed

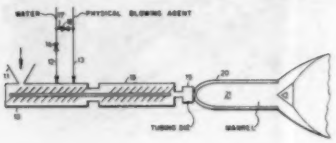
liquid product of said agitation, and forming said gypsum and foamed liquid mixture into lightweight foamed core gypsum wallboard.

4,455,272

METHOD OF EXTRUDING A POLYSTYRENE FOAM USING BOTH A PHYSICAL BLOWING AGENT AND WATER

John C. Schubert, and Edward C. LeDuc, both of Chippewa Falls, Wis., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Mar. 29, 1982, Ser. No. 362,954
Int. Cl.³ B29D *27/00*
U.S. Cl. 264—53 9 Claims



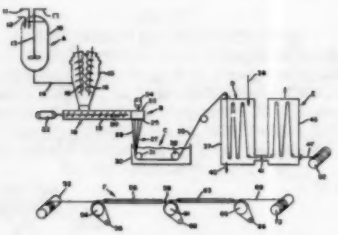
1. In a process for producing extruded polystyrene foam comprising feeding a mixture comprising styrene polymer and nucleating agent to an extruder, and injecting physical blowing agent into the mixture in the extruder, the improvement comprising also injecting water into the extruder and extruding the resulting foamable mixture.

4,455,273

PRODUCING MODIFIED HIGH PERFORMANCE POLYOLEFIN FIBER

Gary A. Harpell, Morristown; Sheldon Kavesh, Whippany; Igor Palley, Madison, and Dusan C. Prevorsek, Morristown, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 30, 1982, Ser. No. 430,577
Int. Cl.³ D01F *6/00*
U.S. Cl. 264—184 9 Claims



1. A process of forming a high tenacity, high modulus polyethylene or polypropylene fiber, in which (a) a dilute solution of ultrahigh molecular weight polyethylene or polypropylene in a first solvent is spun and cooled to form a first gel fiber, (b) the gel fiber is extracted (if said first solvent is non-volatile) with a volatile solvent to form a second gel fiber, (c) the first gel fiber (if said first solvent is volatile) or the second gel fiber is dried to form a xerogel fiber and (d) at least one of the first gel fiber, the second gel fiber and the xerogel fiber is stretched;

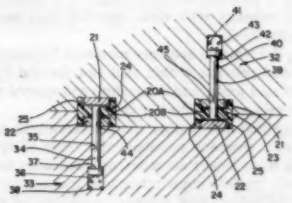
characterized by the dilute solution comprising the ultrahigh molecular weight polyethylene or polypropylene, the solvent and a polymeric additive selected from the group consisting of copolymers containing monoolefins as primary monomers, polyolefins of molecular weight not greater than 250,000, oxidized polyolefins, graft polyolefin copolymers, and polyoxymethylenes, with the weight of polymeric additive being at least 2% of the weight of ultrahigh molecular weight polyethylene or polypropylene, but not being sufficiently high to lower the main melting temperature of the product fiber (by DSC in argon at 10° C./min) to below 140° C. in the case of polyethylene or to below 162° C. in the case of polypropylene.

4,455,274

METHOD OF PRODUCING A COMPOSITE WASHER ASSEMBLY

James R. Horney, Cockeysville, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Aug. 6, 1982, Ser. No. 406,087
Int. Cl.³ B29H *9/10*
U.S. Cl. 264—262 21 Claims

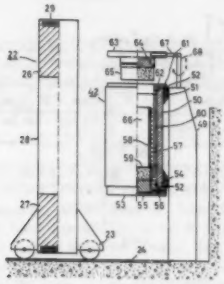


1. The method of molding a composite washer assembly, comprising the steps of: providing a mold including a first portion and a second portion movable relative to the first portion, providing a first plurality of circumferentially spaced resiliently biased pins in the second portion of the mold, providing a second plurality of circumferentially spaced resiliently biased pins in the first portion of the mold, the second plurality of pins being circumferentially shifted with respect to the first plurality of pins, providing a first annular washer having an inner face and a first plurality of circumferentially spaced holes matching the circumferential spacing of the second plurality of pins, positioning the first washer in the first portion of the mold such that the second plurality of pins protrudes through the respective holes in the first washer, providing a second annular washer having an inner face and a second plurality of circumferentially spaced holes matching the circumferential spacing of the first plurality of pins, positioning the second washer in the second portion of the mold such that the first plurality of pins protrudes through the respective holes in the second washer, closing the mold portions together, to cause the first plurality of pins to engage the inner face of the first washer, and the second plurality of pins to engage the inner face of the second washer, thereby positioning the first and second washers in the mold such that the washers are substantially parallel and coaxial with respect to one another, and introducing a plastic substance into the mold between the first and second washers to form a body integrally molded with the washers, the first and second plurality of pins maintaining the washers in position during introduction of the plastic substance into the mold.

4,455,275
METHOD OF MANUFACTURING BODIES OF SILICON NITRIDE

Jan Alderborn, and Hans Larker, both of Robertsfors, Sweden, assignors to ASEA AB, Sweden

Continuation of Ser. No. 9,470, Feb. 1, 1979, abandoned, which is a continuation of Ser. No. 831,929, Sep. 9, 1977, abandoned, which is a continuation of Ser. No. 627,688, Oct. 31, 1975, abandoned. This application Oct. 10, 1980, Ser. No. 196,064
Claims priority, application Sweden, Nov. 11, 1974, 7414102; Jul. 4, 1975, 7507699
Int. Cl.³ B22F 3/14
U.S. Cl. 264—325 12 Claims

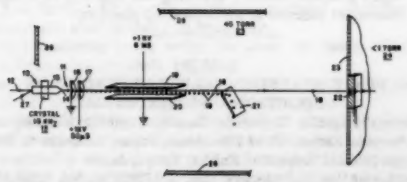


1. A method of manufacturing a body of silicon nitride having improved strength at elevated temperatures and substantially the same strength in all directions which comprises first enclosing a quantity of silicon nitride material in the form of a powder or a product preformed from such powder in a gas-tight casing comprising glass that is yelding at the temperatures used for sintering silicon nitride, and only thereafter heating said casing with the silicon nitride material encased thereby to a temperature of at least 1600° C. and subjecting the casing and thereby the silicon nitride material to isostatic pressing at a pressure of at least 100 MPa using a gaseous pressure medium to form said silicon nitride body within said casing.

4,455,276
ELECTRICALLY CHARGED TARGETS

Ronald K. Goodman, Livermore, and Angus L. Hunt, Alamo, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 698,557, Jun. 22, 1976, Pat. No. 4,138,609. This application Sep. 19, 1978, Ser. No. 943,903
Int. Cl.³ G21B 1/00; G21C 3/00
U.S. Cl. 376—152 3 Claims

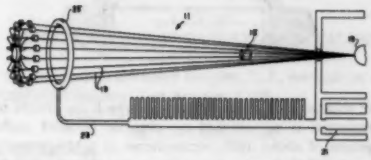


1. An electrically charged laser target capable of being at least vaporized and ionized by laser energy for producing a plasma comprising: a quantity of liquid material composed essentially of anhydrous ammonia and an additive means for significantly increasing the electrical conductivity of said anhydrous ammonia and for enhancing the guidance capability of the target material by electronic guidance systems saidadditive means being composed of dilute HCl.

4,455,277
ELECTRON BEAM MAGNETIC SWITCH FOR A PLURALITY OF FREE ELECTRON LASERS

Leland G. Schlitt, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 26, 1982, Ser. No. 342,982
Int. Cl.³ H01S 3/09; G21B 1/00
U.S. Cl. 376—103 4 Claims



1. Apparatus for simultaneous switching, over a time interval Δt(switching time) of each of a plurality of electron beam segments of substantially identical temporal length Δt(pulse length) electron beam segments into separate wiggler magnet regions in a free electron laser system, the apparatus comprising:

initial steering means to arrange the plurality of electron beam segments in a common circle, with adjacent beam segments being separated by an arc distance $\Delta s = v\Delta t$, where v is the representative velocity with which the electron beam segments move in the common circle and $\Delta t = \Delta t(\text{pulse length}) + \Delta t(\text{switching time})$;

a plurality of ring bending magnet/collimation magnet combinations, spaced apart substantially a distance Δs and positioned on or adjacent to the common circle in which the plurality of electron beams moves, with the number of bending magnet/collimation magnet combinations being at least as large as the number of electron beam segments moving in the common circle; and

a plurality of pulsed beam deflectors/wiggler pipes/wiggler magnet combinations, one such deflector and one such pipe and one such wiggler magnet being associated with each ring bending magnet, to simultaneously switch each electron beam segment out of the common circle and into a wiggler pipe for delivery to a corresponding wiggler magnet, for use in the free electron laser system.

4,455,278
METHOD FOR PRODUCING AN OBJECT ON WHICH AN EXTERIOR LAYER IS APPLIED BY THERMAL SPRAYING AND OBJECT, IN PARTICULAR A DRILL BIT, OBTAINED PURSUANT TO THIS METHOD

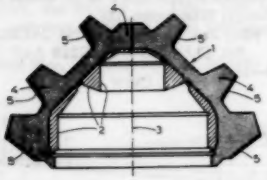
Hans B. van Nederveen, Bosch en Duin, and Martin B. Verburgh, Amersfoort, both of Netherlands, assignors to SKF Industrial Trading & Development Company, B.V., Netherlands

Division of Ser. No. 212,068, Dec. 2, 1980, Pat. No. 4,365,679. This application Aug. 10, 1982, Ser. No. 406,901
Int. Cl.³ B22F 3/00, 7/02
U.S. Cl. 419—6 1 Claim

1. In a method for producing articles having a metal core, an intermediate powder metallurgy layer, and an exterior wear- and chip-resistant layer on the portions thereof requiring the same, the improvement which comprises:

applying to a bearing metal core, powdered steel alloy containing about 3.5% nickel by weight by cold isostatic compaction in a compressible mold under a pressure of about 6000 atmospheres to provide an intermediate powder metallurgical layer having a density of about 90%;

sintering said intermediate layer on said core in an atmosphere of hydrogen at about 1200° C. for about one hour;
applying a wear- and chip-resistant layer to selected portions of said sintered intermediate powder metallurgical layer by plasma spraying; and
hot isostatically compacting the sprayed article in a thin-walled, deep-drawn vessel of low carbon steel having a



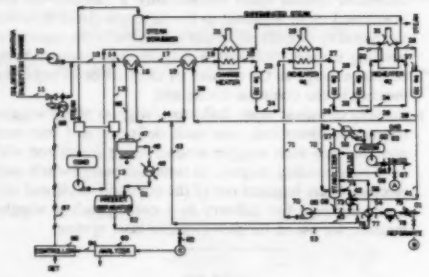
wall thickness of about 0.5 mm in which the article to be compacted is surrounded by ceramic powder under a pressure of about 1600 atmospheres at a temperature of about 1100° C. for about two hours, to achieve a firm bond between said intermediate layer and said wear- and chip-resistant layer, and a composite density for said layers of about 99%.

4,455,279

REFORMER CONTROL

Robert M. Garvert, Great Falls, Mont., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 200,288, Oct. 24, 1980, Pat. No. 4,375,405. This application Jul. 22, 1982, Ser. No. 400,833
Int. Cl.³ G05D *7/00*; C10G *35/04*; B01J *8/00*
U.S. Cl. 422—62 **3 Claims**



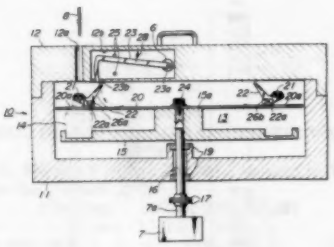
1. Reformer control system comprising:
(a) a reformer;
(b) means defining and containing a supply source of hydrocarbon feedstock;
(c) a conduit means connecting said source of hydrocarbon feedstock and said reformer;
(d) means defining and containing a supply source of halogen;
(e) a conduit means connecting said source of halogen and said reformer;
(f) a reformate withdrawal conduit associated with said reformer;
(g) an isopentane detector means operatively connected with said reformate withdrawal conduit to detect the content of isopentane in said reformate and to generate an isopentane signal;
(h) a flow controller means in said conduit means connecting the source of halogen and said reformer;
(i) a controller operatively connected to said isopentane detector means and to said flow controller means such as to manipulate said flow controller means in response to said isopentane signal.

4,455,280

APPARATUS FOR PRESERVING LIQUID IN AUTOMATIC ANALYZER

Toshio Shinohara, Chofu, and Masao Usikubo, Hachioji, both of Japan, assignors to Olympus Optical Co. Ltd., Japan

Filed Feb. 2, 1982, Ser. No. 345,155
Claims priority, application Japan, Feb. 10, 1981, 56-16656
Int. Cl.³ G01N *35/00*
U.S. Cl. 422—63 **6 Claims**



1. An apparatus for preserving and delivering liquids to be delivered by a delivery device including a probe for aspirating and discharging a given amount of liquid in an automatic chemical analyzer, each liquid being contained in respective liquid containers, comprising:
a compartment including a housing and an upper lid which is detachably fitted to the housing;
a turntable arranged rotatably in said housing and having a plurality of positions for locating a plurality of said liquid containers;
means for keeping a temperature inside the compartment at a desired temperature;
means for rotating the turntable for indexing a desired one of said plurality of liquid containers at a liquid aspirating position;
a hole formed in the upper lid at said liquid aspirating position, said probe of the delivery device being insertable through said hole;
a plurality of movable plug assemblies provided on the turntable, each of the plug assemblies being movable between a closed position for closing an opening of a respective liquid container and an open position for exposing the opening of a respective liquid container; and
removing means comprising a member movably secured to the upper lid and having an actuating end which is selectively engaged with a movable plug assembly for moving the movable plug assembly from the closed position to the open position, thereby exposing the opening of a liquid container indexed at the aspirating position.

4,455,281

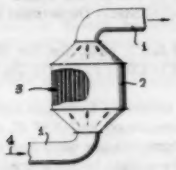
PLATE-SHAPED CATALYST UNIT FOR NOX REDUCTION OF EXHAUST GAS

Nobuyoshi Ishida; Yoshihide Kondo; Kunihiko Konishi, and Hiroyuki Kamio, all of Hiroshima, Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 966,945, Dec. 6, 1978, Pat. No. 4,285,838. This application Apr. 16, 1981, Ser. No. 254,600
Claims priority, application Japan, Dec. 8, 1977, 52-146583; Dec. 8, 1977, 52-146584
Int. Cl.³ B01D *53/36*
U.S. Cl. 422—171 **3 Claims**

1. A catalytic apparatus for NOx reduction of exhaust gas comprising a plurality of plate-shaped catalyst units each dis-

posed in parallel with the gas flow and generally arranged across the gas flow, each of said catalyst units being produced by a method comprising the steps of spraying molten metal upon the surfaces of a metal plate to allow the molten metal to



accumulate thereon to form rough surfaces and depositing a catalyst containing titanium and at least another catalytic material for NO_x reduction of exhaust gas onto said rough surfaces whereby the catalyst is firmly secured on said rough surfaces.

4,455,282

ELECTRIC FURNACE FOR CONTINOUSLY HEATING AND REGENERATING SPENT ACTIVATED CARBON

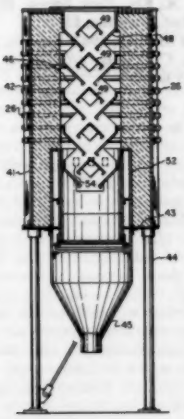
Gerald E. Marquess, 100 Hudson St., New York, N.Y. 10013, and David J. Nell, Lotus Ave., Oradell, N.J. 07649

Continuation-in-part of Ser. No. 281,691, Jul. 9, 1981, Pat. No. 4,374,092. This application Sep. 7, 1982, Ser. No. 415,268

The portion of the term of this patent subsequent to Feb. 15, 2000, has been disclaimed.

Int. Cl.³ B01J *4/00, 8/12, 20/34*

U.S. Cl. 422—199 **3 Claims**



1. A furnace for heating particulate material cmprising:

an air-tight shell defining an enclosure,

a heat insulating lining within the shell, the inside of which defines a hollow shaft,

electrical resistance heating elements spaced along the length of the hollow shaft adjacent the insulating lining,

a baffle system supported within the shaft, comprising:

side supports vertically positioned within the shaft;

a plurality of inner trays each defining pairs of sloping surfaces joined at a ridge, said pairs of inner trays spaced vertically and secured by the side supports;

a plurality of outer trays each defining a sloping surface, each of said outer trays arranged to receive material falling from the inner tray thereabove and to deliver material to the ridge of an inner tray therebelow;

said inner and outer trays arranged such that said material forms a flowing bed gently conveyed by gravity down through the furnace from tray to tray in a sinuous path exposing the flowing bed of material first on one side and then on the other and such that flow from an upper to a lower tray stops when the lower tray is filled; and

the side supports having a plurality of openings therein positioned under the inner trays and the space above the upper edges of the outer trays being open such that the surface of the flowing bed while conveyed over both inner and outer trays is exposed to radiation from the heating elements and to circulation of convection gases.

4,455,283

MOLYBDENUM EPOXIDATION CATALYST RECOVERY

Norman H. Sweed, Berkeley Heights, N.J., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 24, 1982, Ser. No. 381,120

Int. Cl.³ C01G *39/00*

U.S. Cl. 423—53 **5 Claims**

1. A process for the recovery of molybdenum from a reaction mixture obtained from the epoxidation of an olefin with an organic hydroperoxide in the presence of a molybdenum compound catalyst wherein product epoxide and the alcohol corresponding to the hydroperoxide are removed from the reaction mixture leaving a spent catalyst solution containing between about 0.1 and 2% molybdenum which process comprises evaporating the spent catalyst solution at a pressure less than 400 mm Hg in a circulation evaporator comprising a vapor-liquid separator and a heating means wherein spent catalyst solution is introduced to the vapor-liquid separator and recovering a concentrate comprising molybdenum catalyst values and heavy organic residues.

4,455,284

PROCESS FOR DESILICATION OF ALUMINATE SOLUTION

Viktor M. Sizyakov; Nikolai A. Kaluzhsky, both of Leningrad; Khoren A. Badalants, Pikalevo;; Ivan M. Kostin, Pikalevo; Isaak A. Zatulovsky, Pikalevo; Evgeny A. Isakov, Pikalevo; Zarya N. Alexandrova, Pikalevo; Valentin N. Afanasiev, Pikalevo; Vinetsy I. Chernov, Pikalevo; Alexandr G. Zhukov, Pikalevo; Viktor S. Kutsenko, Pikalevo; Galina M. Vysotskaya, Leningrad; Evgenia S. Ostrovlyanchik, Kolomna; Evgeny I. Mironov, Achinsk; Pavel S. Vladimirov; Alexei I. Alexeev, both of Leningrad, all of U.S.S.R.; Leonid I. Finkelshtein, deceased, late of Achinsk; Nina J. Finkelshtein, administrator, and Julia L. Finkelshtein, administrator, both of Lvov, U.S.S.R., assignors to Vsesojuzny Nauchnoissledovatelsky I Proektny Institut Aljuminievoi, Magnievoi I Elektrodnoi Promyshlennosti, Leningrad, U.S.S.R.

Filed Jan. 18, 1983, Ser. No. 458,781

Int. Cl.³ C01F *7/02*

U.S. Cl. 423—119 **4 Claims**

1. A process for desilication of an aluminate solution comprising successively treating said aluminate solution first with a reagent "a", which is a desilication product consisting essentially of calcium hydrogarnet of the formula:

$$3CaO.Al_2O_3.nSiO_2.(6-2n)H_2O,$$

where $n \leqq 1$, and after a period of 0.5 to 2 hours, without separating the reagent "a", at a temperature of 40° to 105° C., with a reagent "b" of the formula $4CaO.Al_2O_3.(0.1-0.6)X.mH_2O$, where $X = CO_2$, SO_3, or a mixture thereof, and $m = 8-15$, at a weight ratio of $b/SiO_2 = 5-50$, and weight ratio of said reagents a:b = 1-3:1.

4,455,285

HEAT TREATMENT OF MATERIAL

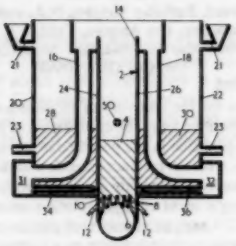
David W. Watkins, The Elms, Villa Rd., Plumtree, Nottinghamshire; Peter C. Wheatley, 63 Windsor Rd., Evesham, Worcestershire, and William G. Kaye, 3 Jersey Ave., Cheltenham, Gloucestershire, all of England

Continuation of Ser. No. 61,246, Jul. 27, 1979, abandoned. This application Apr. 6, 1981, Ser. No. 251,119

Claims priority, application United Kingdom, Aug. 8, 1978, 32539/78

Int. Cl.³ C04B *11/02*

U.S. Cl. 423—171 19 Claims



1. Apparatus for the heat treatment of a material in discrete form including a horizontally elongate combustor adapted to contain a fluidised combustion bed of particulate material and having at least one horizontally elongate imperforate thermally conductive wall for indirect heat exchange therethrough, a fuel inlet for the combustor, an exhaust gas outlet for the combustor, a heat treatment vessel disposed alongside the combustor and enclosing at least the said wall to receive heat transmitted therethrough from the combustion, the vessel being adapted to contain a bed of material in discrete form, a material inlet and a material outlet in the vessel, a plurality of heat exchange means passing through the vessel and communicating with the exhaust gas outlet of the combustor, and downwardly directed perforated gas distribution means located in the vessel and connected to the heat exchange means, the gas distribution means extending into the base region and releasing at diverse points across the plan of the vessel at a plurality of horizontally spaced locations.

2. A method for the heat treatment of a material in discrete form, the method including the steps of burning a fuel in a fluidised combustion bed contained within a combustor having at least one thermally conductive imperforate wall, arranging a heat treatment bed of the material so as to receive heat through said wall, forming combustion gases from the combustion bed directly into a plurality of spaced streams in which each stream in turn is formed into a plurality of smaller streams released at diverse points across the plan of the heat treatment bed, introducing said smaller streams into the base region of the heat treatment bed downwardly thereby distributing the gases throughout the base region of the heat treatment bed which is fluidised at least partly by said gases, and passing the combustion gases from the combustion bed in heat exchange relation with the heat treatment bed prior to the introduction of the gases into the heat treatment bed.

4,455,286

HIGH-TEMPERATURE SORBENT METHOD FOR REMOVAL OF SULFUR CONTAINING GASES FROM GASEOUS MIXTURES

John E. Young, Woodridge, Ill., and Vinod M. Jalan, Concord, Mass., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 7, 1982, Ser. No. 395,895

Int. Cl.³ C01B *17/16, 31/20, 17/00*

U.S. Cl. 423—230 3 Claims

1. A method of removing hydrogen sulfide from a gaseous mixture at a temperature of 500°–700° C. comprising:

providing a sorbent mixture including about 60–70% ZnO and 30–40% by weight highly dispersed CuO;

reducing the CuO to elemental copper by contact with hydrogen gas at a temperature of 230°–650° C.;

passing the gaseous mixture at a temperature of 500°–700° C. into contact with the reduced sorbent mixture to form sulfides of copper in the sorbent as it is spent;

regenerating the spent sorbent in an oxidizing atmosphere to remove substantially all of its sulfur content and form a regenerated sorbent mixture including a major proportion of ZnO and a minor proportion of CuO;

reducing the regenerated CuO to elemental copper and passing additional gaseous mixture into contact with the reduced and regenerated sorbent mixture for removing H_2S from the gaseous mixture.

4,455,287

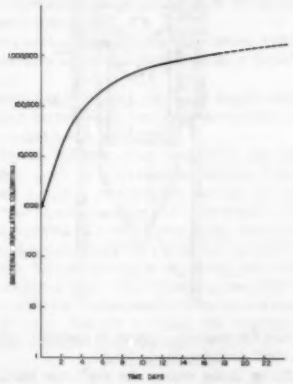
METHOD OF STABILIZING CHELATED POLYVALENT METAL SOLUTIONS

Harold S. Primack, Skokie, Ill.; Dom E. Reedy, Shreveport, La., and Frederick R. Kin, Park Forest, Ill., assignors to ARI Technologies, Inc., Palatine, Ill.

Filed Mar. 15, 1982, Ser. No. 358,044

Int. Cl.³ C01B *17/04;* B01D *53/34*

U.S. Cl. 423—573 R 7 Claims



1. A method of oxidizing hydrogen sulfide in gases to elemental sulfur by a continuous polyvalent metal catalytic liquid phase oxidation which prevents the rapid loss of chelated polyvalent metal catalyst from a catalytic oxidation-reduction reaction solution comprising; (1) incorporating in a chelated polyvalent metal catalyst-containing reaction solution which is exposed to contamination by bacteria and minor amounts of other micro-organisms a first broad spectrum bacteriostat for lowering the rate of growth of bacteria and other micro-organisms encountered to significantly retard the rate of growth of said bacteria and micro-organisms in said solution, (2) continuing addition of said first broad spectrum biocide to said solution at a level which is below the kill concentration and which

retards the growth of said bacteria and micro-organisms in said solution and maintains the concentration of said microorganisms below about 1×10^6 colonies per ml for an extended period, (3) periodically determining the concentration of said bacteria in said solution and in the event the concentration of said microorganisms increase above about 1×10^6 colonies per ml slug-feeding into said solution a potent fast acting second broad spectrum biocide having bactericidal action in an amount which rapidly kills substantially all said bacteria and other micro-organisms in said solution, and (4) thereafter resuming addition of said bacteriostat to said reaction solution.

4,455,288

ARRANGEMENT FOR THE ENTRAINMENT OF PARTICULATE MATERIALS

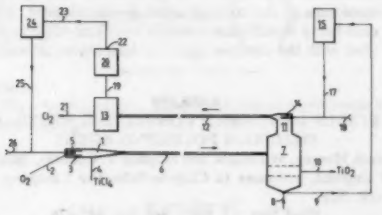
David Salter, New South Wales, Australia, and David Scott, South Humberside, England, assignors to Laporte Industries Limited, London, England

Filed Nov. 20, 1981, Ser. No. 323,440

Claims priority, application United Kingdom, Dec. 15, 1980, 8040046

Int. Cl.³ C01G *23/047, 23/00*

U.S. Cl. 423—612 **6 Claims**



1. In a process for the production of titanium dioxide by the vapour phase oxidation of titanium tetrachloride in a reactor at an elevated temperature, inert particulate material being entrained in a carrier gas under conditions of pressure variation of at least 0.34 bars due to the effect of process variables and being passed through the reactor and/or pipe-work used in the process to reduce or prevent the formation of scale on the interior surfaces thereof, the improvement which comprises; feeding the inert particulate material into the carrier gas by a mechanical feeding device having an inlet for inert particulate material associated with a hopper fed inlet conduit and an outlet for inert particulate material associated with conduit means for providing a stream of carrier gas so as to entrain particulate material issuing from the outlet from the feeding device, and in that the pressure difference between the feeding device inlet and outlet are substantially eliminated by the provision of gas flow interconnection means directly connecting the said inlet or said inlet conduit with said outlet or with the associated conduit means, and in that the feed of inert particulate material is below 150 Kg per tonne of titanium dioxide produced.

4,455,289

COMBINED PROCESS FOR PREPARING ALUMINA AND ALPHA-OLEFINS

R. L. Poe, and D. J. Royer, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Aug. 6, 1982, Ser. No. 405,973

Int. Cl.³ C01F *7/02;* **C07C** *2/02, 2/88*

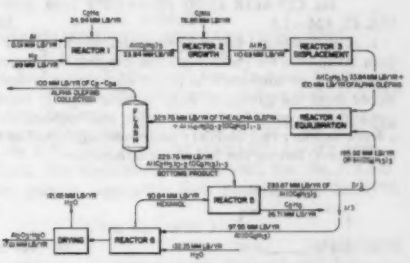
U.S. Cl. 423—630 **8 Claims**

1. A combined process for the preparation of alumina and alpha-olefins comprising:

(a) reacting trialkylaluminum compounds having alkyl groups in the range of from 2 to about 24 carbon atoms with ethylene at temperatures in the range of from about 10° C. to about 200° C., and at pressures of from about 50 to about 800 psig in the presence of a reduction catalyst selected from the group consisting of cobalt, palladium, iron, nickel, or a reducing nickel compound selected from the group consisting of Raney nickel, nickel acetyl-acetonate, and nickel napthenate to form triethylaluminum and alpha-olefins in the range of from 2 to about 24 carbon atoms,

(b) adding aluminum trialcoholates, where the alcoholate portion contains from 4 to 8 carbon atoms, to the reaction product of step (a),

(c) allowing the admixture of step (b) to react at pressures in the range of from about 50 to about 800 psig, and at temperatures in the range of from about 10° to about 200° C., whereby substantially all of the triethylaluminum is converted into compounds with at least one $C_{4\ to\ 8}$ alcoholate group per molecule, wherein said compounds have the general formula $Al(C_2H_5)_X(OC_{4\ to\ 8}H_{9\ to\ 17})_Y$ where X=0 to 2, Y=3 to 1 and X+Y=3,



(d) fractionating the mixture resulting after completion of step (c) to recover (1) an alpha-olefin fraction in the range having from 2 to 24 carbon atoms per molecule, and (2) an aluminum ethyl alcoholate bottoms fraction (a mixture of compounds having the general formula $Al(C_2H_5)_X(OC_{4\ to\ 8}H_{9\ to\ 17})_Y$ where X=0 to 2, Y=3 to 1 and X+Y=3),

(e) adding alcohol in the ranges having from 4 to 8 carbon atoms per molecule, to the aluminum ethylalcoholate bottoms fraction to form aluminum trialcoholate containing from 4 to 8 carbom atoms per alcoholate portion, and ethane,

(f) separating the ethane and aluminum trialcoholate products from step (e), and,

(g) hydrolyzing the aluminum trialcoholates from step (e) to form alumina and alcohols containing from 4 to 8 carbon atoms per molecule.

4,455,290

INHIBITION OF FIBRIN POLYMERIZATION BY A PEPTIDE ISOLATED FROM FIBRIN FRAGMENT D_1

Stephanie A. Olexa, Hellertown, and Andrei Z. Budzynski, Glenside, both of Pa., assignors to Research Corporation, New York, N.Y.

Filed Apr. 2, 1981, Ser. No. 250,173

Int. Cl.³ A61K *49/00, 43/00*

U.S. Cl. 424—1.1 **24 Claims**

1. A purified peptide having the amino acid sequence (a) Gln-Ala-Gly-Asp-Val, (b) Thr-Arg-Trp-Tyr-Ser-Met-Lys-Lys-Thr-Thr-Met-Lys-Ile-Ile-Pro-Phe-Asn-Arg-Leu-Thr-Ile-Gly-Glu-Gly-Gln-Gln-His-His-Leu-Gly-Gly-Ala-Lys-Gln-Ala-Gly-Asp-Val or (c) a purified peptide having an amino acid sequence intermediate between said amino acid sequences (a) and (b).

5. A method of preparing a peptide inhibitor of fibrin monomer polymerization, comprising the steps of: degrading Fragment D_1 of fibrinogen with plasmin to form plasmin degradation products; separating said peptide inhibitor from plasmin degradation products of different molecular weights to give a

partially purified peptide inhibitor; and isolating said peptide inhibitor from other peptides in said partially purified inhibitor by means of said peptide inhibitor's binding affinity for fibrin monomer.

22. A radioactive composition suitable for intravenous injection, comprising: a peptide inhibitor of fibrin monomer polymerization prepared by the process of claim 5, 8 or 11 wherein a gamma-emitting radioactive isotope is covalently attached to said purified peptide; and a pharmaceutically acceptable carrier.

4,455,291

ACCELERATORS FOR FORMING CATIONIC TECHNETIUM COMPLEXES USEFUL AS RADIODIAGNOSTIC AGENTS

Michael F. Tweedle, North Chelmsford, Mass., assignor to New England Nuclear Corporation, Boston, Mass.

Filed Jan. 22, 1982, Ser. No. 341,553

Int. Cl.³ A61K *43/00, 49/00;* **C07F** *9/66, 9/90*

U.S. Cl. 424—1.1 **33 Claims**

1. A composition for preparing cationic lipophilic technetium complexes for radiodiagnostic imaging, said composition comprising an admixture of (a) an accelerator compound selected from the group of water-soluble organic bidentate ligands that are capable of coordinating with technetium to form a 4 to 6 member ring and (b) a target-seeking ligand or aqueous salt thereof, having the following structure:

I

wherein:

i is an integer from 1 to 6;

R, R^1, R^2, R^3, R^4, R^5 and R^6 are each independently selected from hydrogen or substituted or unsubstituted alkyl, aryl, alkylaryl, arylalkyl, monocycloalkyl, polycycloalkyl, heterocyclic and carbocyclic groups, and R plus R^i may be taken together to form a cyclic compound or separately to form a linear compound;

Y^1, Y^2, Y^3, Y^4, Y^5 and Y^6 are independently selected from substituted or unsubstituted alkyl, aryl, alkylaryl, arylalkyl, monocycloalkyl, polycycloalkyl, heterocyclic and carbocyclic groups;

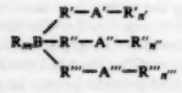
A^1, A^2, A^3, A^4, A^5 and A^6 are each, independently, a neutral donor atoms having a free-electron pair available for complexing with TC-99m or TC-99 to form a cationic complex; and

k_1, k_2, k_3, k_4, k_5 and k_6 are each independently zero or one; or

II

or

III



wherein:

R, R′, R″ and R‴ are independently selected from hydrogen or substituted or unsubstituted alkyl, aryl, alkylaryl, arylalkyl, monocycloalkyl, polycycloalkyl, heterocyclic and carbocyclic groups;

A, A′, A″ and A‴ are independently selected from the group of neutral donor atoms having a pair of electrons available for complexing with Tc-99m or TC-99 to form a cationic complex;

B is an atom selected from the group of neutral donor atoms having a pair of electrons available for complexing with Tc-99m or TC-99 or from the elements listed in Group IV A of the periodic table;

n, n′, n″ and n‴ are independently the integer 1 or 2; and m is 0 or 1;

said accelerator compound having a weaker coordinating bond with technetium than the target-seeking ligand.

4,455,292

RADIOLOGICAL CONTRAST COMPOSITION AND METHODS

John M. Bertoni, San Antonio, Tex., assignor to Board of Regents, the University of Texas System, Austin, Tex.

Filed Apr. 5, 1982, Ser. No. 365,337

Int. Cl.³ A61K *49/04*

U.S. Cl. 424—5 **5 Claims**

1. A method of minimizing in a host the central nervous system complications associated with the intrathecal administration of radiological contrast agents which are competitive inhibitors of hexokinase activity, the method comprising:

coadministering glucose to the host at the substantially the same time as the contrast agent is administered, the glucose being in sufficient quantity to effectively compete in vivo with the contrast agent for hexokinase activity.

4,455,293

STABLE DENTIFRICE CONTAINING NEUTRAL SILICEOUS POLISHING AGENT

Kenneth Harvey, Wilmslow, and Stephen T. Connors, Sale, both of England, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 17, 1982, Ser. No. 442,476

Claims priority, application United Kingdom, Nov. 19, 1981, 8134925

Int. Cl.³ A61K *7/18*

U.S. Cl. 424—52 **12 Claims**

1. A stable dentifrice contained in an unlined aluminium tube consisting essentially of an aqueous dentally acceptable oral vehicle, at least 27.5% by weight of the dentifrice comprising water and dispersed in the said oral vehicle from 10 to 40% by weight of the dentifrice of a neutral sodium aluminosilicate polishing agent containing about 4-5% total aluminium as Al and having a stirred slurry pH in the range from 6.5 to 7.5, and a stabilizing amount of monofluorophosphate ion, the dentifrice having a stirred slurry pH in the range from 5.5 to 8, said monofluorophosphate ion stabilizing said dentifrice against gas generating reaction between the components of said dentifrice when said dentifice is in contact with the surface of said unlined aluminium tube.

4,455,294

STABLE DENTIFRICE CONTAINING ACIDIC SILICEOUS POLISHING AGENT

Kenneth Harvey, Wilmslow, and Stephen T. Connors, Sale, both of England, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 17, 1982, Ser. No. 442,475

Int. Cl.³ A61K *7/16, 7/18*

U.S. Cl. 424—52 **12 Claims**

1. A stable dentifrice contained in an unlined aluminium tube consisting essentially of an aqueous dentally acceptable oral vehicle, at least 27.5% by weight of the dentifrice comprising water and dispersed in the said oral vehicle from 10 to 40% by weight of the dentifrice of an acidic sodium aluminosilicate polishing agent containing about 4% total aluminium as Al and having a stirred slurry pH (as herein defined) in the range from 5 to less than 6.5, and a stabilizing amount of monofluorophosphate ion, the dentifrice having a stirred slurry pH in the range

from 5.5 to 8, said monofluorophosphate ion stabilizing said dentifrice against gas generating reaction between the components of said dentifrice when said dentifrice is in contact with the surface of said unlined aluminium tube.

4,455,295

N-(P-SULFOPHENYL) CINNAMAMIDE AS SUNSCREEN AGENT

Rudolf Hopp; Horst Finkelmeier, both of Holzminden, and Roland Langner, Bevern, all of Fed. Rep. of Germany, assignors to Haarmann & Reimer GmbH, Holzminden, Fed. Rep. of Germany

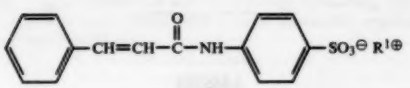
Filed May 6, 1983, Ser. No. 492,076

Claims priority, application Fed. Rep. of Germany, May 25, 1982, 3219643

Int. Cl.³ A61K *7/44*; C07C *143/53*

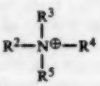
U.S. Cl. 424—60 **7 Claims**

1. N-(p-sulfophenyl)-cinnamamide or a salt thereof of the formula



in which

$R^{1}\oplus$ is a hydrogen ion, alkali metal ion or ammonium ion of the formula



, and

R^2 to R^5 each independently is hydrogen, or lower alkyl which is optionally substituted by hydroxyl or aryl, or two of them are joined to form a 5-membered or 6-membered ring which optionally contains an oxygen atom.

4. In a sunscreen composition comprising a sunscreen base and a sunscreening agent, the improvement which comprises employing as said agent a compound or salt according to claim 1.

4,455,296

HYBRID CELL LINES PRODUCING MONOCLONAL ANTIBODIES DIRECTED AGAINST *HAEMOPHILUS INFLUENZAE*

Eric J. Hansen, Plano; John R. Kettman, Carrollton, and Stella M. Robertson, Plano, all of Tex., assignors to Board of Regents, the University of Texas System, Austin, Tex.

Filed Feb. 2, 1982, Ser. No. 345,201

Int. Cl.³ A61K *39/40, 39/395*; C12N *5/00, 15/00*

U.S. Cl. 424—87 **19 Claims**

1. A composition of matter consisting essentially of a continuous hybrid cell line that produces monoclonal antibody to an outer membrane protein antigen of *Haemophilus influenzae* type b.

13. A composition of matter consisting essentially of monoclonal antibodies directed against an outer membrane protein antigen of *Haemophilus influenzae* type b.

19. The composition of matter of claim 13 together with a physiologically compatible diluent, the composition adapted for use in passive immunization of a host suspected of having *Haemophilus influenzae* type b disease.

4,455,297

METHOD FOR PRODUCING PERTUSSIS TOXOID

Yukio Syukuda; Hideo Watanabe, and Shigeo Matsuyama, all of Hikari, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 229,931, Jan. 30, 1981, abandoned. This application Aug. 16, 1982, Ser. No. 408,563

Claims priority, application Japan, Sep. 12, 1980, 55-127825

Int. Cl.³ A61K *39/10*; C07G *7/00*; C12P *21/00*

U.S. Cl. 424—92 **8 Claims**

1. A method of producing a pertussis toxoid, which comprises removing endotoxin from a culture supernatant of a *Bordetella pertussis* phase I strain or a concentrate thereof, flocculating pertussis exotoxin in the resultant fluid by permitting formaldehyde to act upon the fluid in the substantial absence of basic amino acid and dispersing the flocculent mass in the resulting suspension of ultrasonication.

4,455,298

PHARMACEUTICAL PREPARATIONS WITH GASTRO-PROTECTIVE ACTION

Stuart J. McFarlane, 5 Montmere Ave., Te Atatu, and John E. Croft, 23 Waimarie Rd., Whenuapai Village, both of Auckland, New Zealand

Continuation of Ser. No. 194,152, filed as a PCT EP 79/00072, Sep. 20, 1979, published as WO 80/00661, Apr. 17, 1980, abandoned. This application May 10, 1982, Ser. No. 376,898

Claims priority, application New Zealand, Sep. 25, 1978, 188489

Int. Cl.³ A61K *35/56*

U.S. Cl. 424—95 **16 Claims**

1. A pharmaceutical preparation for oral administration containing as component A

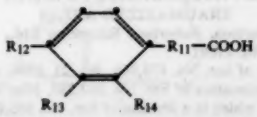
(a) the powder obtained by drying and grinding the whole of the flesh of the mollusc Perna canaliculus,

(b) the lipid extract mixture obtained by solvent extraction of the flesh of the mollusc Perna canaliculus or of the dry powder as defined under (a) with a lipid dissolving organic solvent,

(c) the powder obtained by drying and grinding the gonads of the mollusc Perna canaliculus, or

(d) the lipid extract mixture obtained by solvent extraction of the gonads of the mollusc Perna canaliculus or of the dry powder as defined under (c) with a lipid dissolving organic solvent,

and as component B an antiphlogistic, antipyretic or analgesic acting compound of the formula



wherein R_{11} is lower alkylidene, or lower alkylene or lower alkenylene which are unsubstituted or substituted by oxo, R_{12} is hydrogen, lower alkyl, cyclohexyl, cyclohexenyl, phenyl, lower alkoxy, lower alkenyloxy, lower alkyleneamino or lower alkenyleneamino which is unsubstituted or substituted by oxo or lower alkyleneamino, 1-oxo-2-isoindolinyl or thenoyl, R_{13} is hydrogen, halogen, phenyloxy or benzoyl which is unsubstituted or substituted by halogen, and R_{14} is hydrogen, lower alkyl, phenyloxy which is unsubstituted or substituted by halogen, amino or anilino which is unsubstituted or substituted by halogen, with the proviso that at least one of the groups R_{12}, R_{13} and R_{14} is hydrogen and at least one of them is different from hydrogen, or a pharmaceutically acceptable salt of such a compound, or a lower alkyl ester which is unsubstituted or substituted by hydroxyl, or the hydroxamic acid derivative thereof.

4,455,299

STORAGE OF BLOOD PLATELETS

Gerald A. Grode, Grayslake, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Nov. 20, 1981, Ser. No. 323,224
Int. Cl.³ A61K 35/14; A01N 1/02
U.S. Cl. 424—101 13 Claims

1. A method comprising contacting a container holding about from 5×10^8 to 25×10^8 platelets/ml with an atmosphere having an oxygen proportion greater than about 21%, said container having a low oxygen transfer rate of about from 0.050 to 0.010 n moles/cm^2-min-cmHg.

4,455,300

FIBRONECTIN COMPOSITIONS

Donald G. Wallace, Albany; Phillip M. Schneider, Alameda, and John L. Lundblad, El Cerrito, all of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Continuation of Ser. No. 127,340, Mar. 5, 1980, Pat. No. 4,341,764. This application May 25, 1982, Ser. No. 381,808
Int. Cl.³ A61K 35/14
U.S. Cl. 424—101 3 Claims

1. A therapeutic composition, prepared from frozen human plasma, comprising: 14%–24% fibronectin, 75%–85% fibrinogen, andd about 1% cryoprecipitate proteins, and having less than 28 units per gram total protein of antihemophilic factor.

4,455,301

ANTIHEMOPHILIC FACTOR CONCENTRATE

Gautam Mitra, Kensington, and John L. Lundblad, El Cerrito, both of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Division of Ser. No. 124,891, Feb. 26, 1980, Pat. No. 4,386,068. This application Sep. 29, 1982, Ser. No. 427,372
Int. Cl.³ A61K 35/14
U.S. Cl. 424—101 3 Claims

1. Antihemophilic factor concentrate containing Von Willebrandt factor (VIIIR:WF), procoagulant factor (VIII:C) and fibrinogen (ϕ) wherein the VIII:C/VIIIR:WF ratio is in the range of about 1/0.5–1 and wherein the ratio of procoagulant factor to milligrams of fibrinogen (VIII:C/mg ϕ) is in the range of about 2.6–4.0/1.

4,455,302

MEDICAL PROTEIN HYDROLYSATE, PROCESS OF MAKING THE SAME AND PROCESSES OF UTILIZING THE PROTEIN HYDROLYSATE TO AID IN HEALING TRAUMATIZED AREAS

Harry J. Robertson, Robertson Resources Ltd., Wesley Dr., Salisbury, Md. 21801

Continuation of Ser. No. 170,866, Jul. 21, 1980, abandoned, which is a continuation of Ser. No. 903,588, May 8, 1978, Pat. No. 4,216,204, which is a division of Ser. No. 685,050, May 10, 1976, Pat. No. 4,094,973, which is a continuation-in-part of Ser. No. 409,145, Oct. 24, 1973, abandoned. This application Mar. 18, 1982, Ser. No. 359,192
The portion of the term of this patent subsequent to Jun. 13, 1995, has been disclaimed.
Int. Cl.³ A61K 37/00; C07G 7/00
U.S. Cl. 424—177 9 Claims

1. Process of regrowing muscle tissue, skin and nerve tissue of a destroyed or damaged portion of a living animal comprising applying to the affected area of the living animal, protein hydrolysate derived by comminuting immature poultry feet and washing them; comingling said comminuted immature poultry feet with dilute, mild organic acid at a pH of between about 3.6 and about 6.5 at a temperature of up to about 155° F. to produce a slurry; removing the fat constituent from the slurry; and removing from the residue of the slurry the solubilized protein and dissolved mineals as the protein hydrolysate.

4,455,303

RENIN INHIBITORS

James Burton, Amesbury, Mass., assignor to The General Hospital Corporation, Boston, Mass.

Filed May 24, 1983, Ser. No. 497,707
Int. Cl.³ A61K 37/00; C07C 103/52
U.S. Cl. 424—177 8 Claims

1. A pentapeptide of the formula:

H—A—B—C—D—E—OX

wherein

A, B, D are the same or different amino acids residues selected from the group consisting of Phe, Phe(4-Cl), Phe(4-F), Phe(4-Br), Phe(OMe), Tyr, Phe (4-I), and Tyr (ortho-Me);

C is Val, Thr or threo-α-amino-3-chlorobutyric acid;

E is lysine or arginine;

X is NH_2, NHR, wherein R is C_1–C_4 alkyl, OH, OR′, wherein R^1 is C_1–C_4 alkyl, or OM; where M is a physiologically acceptable cation;

or addition salts of said pentapeptide.

4,455,304

COMPOSITION FOR REPELLING BIRDS

Kourken Yaralian, 5336 E. Easterby Dr., Fresno, Calif. 93727

Filed Apr. 19, 1982, Ser. No. 369,984
Int. Cl.³ A61K 35/78
U.S. Cl. 424—195 9 Claims

1. A method for repelling birds from a crop, the method comprising applying in the vicinity of the crop a composition including finely divided dried garlic constituent and finely divided dried cayenne pepper constituent, the garlic constituent being present in at least about one-fifth to at least about five times the weight of the pepper constituent, dry weight, and the total amount of the garlic and pepper constituents applied being from at least about 0.37 to 3.7 kilograms per hectare.

4,455,305

COMPOSITION FOR THE TREATMENT OF COLITIS ULCEROSA, ENTERITIS REGIONALIS CROHN (MORBUS CROHN), CHRONIC NONSPECIFIC COLITIS AND DIVERTICULITIS AND THE USE OF SALICYLAZOBENZOIC ACID FOR THE PREPARATION OF SUCH COMPOSITIONS

Hartmut Rokos, Berlin, Fed. Rep. of Germany, assignor to Henning Berlin GmbH Chemie- und Pharmawerk, Berlin, Fed. Rep. of Germany

Filed Jul. 9, 1981, Ser. No. 281,684
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1981, 3027013
Int. Cl.³ A61K 31/655
U.S. Cl. 424—226 8 Claims

1. A pharmaceutical composition in unit dosage form for the treatment of colitis ulcerosa, enteritis regionalis Crohn (Morbus Crohn), chronic nonspecific colitis and diverticulitis, said unit dosage form containing 0.3 to 1 gram of salicylazobenzoic acid, a physiologically acceptable salt thereof or a mixture thereof and a pharmaceutically acceptable adjuvant.

4. A method of treating colitis ulcerosa, enteritis regionalis Crohn (Morbus Crohn), chronic nonspecific colitis or diverticulitis which comprises orally administering an effective amount of salicylazobenzoic acid, a physiologically acceptable salt thereof or a mixture thereof.

4,455,306
METHOD FOR CONCENTRATING β-LACTAM ANTIBIOTIC SOLUTION

Kiyoshi Nara, Kyoto; Kazuyoshi Katamoto, Suita; Sadao Ohkido, Nakano; Isao Yamamoto, Chiba, and Hiroshi Yanome, Matsudo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 21, 1981, Ser. No. 333,182
Claims priority, application Japan, Dec. 24, 1980, 55-184597
Int. Cl.³ A61K *31/54*
U.S. Cl. 424—246 **2 Claims**

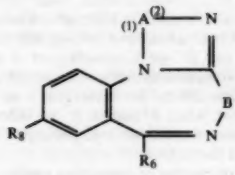
1. A method for concentrating β-lactam antibiotic solution, which comprises subjecting a dilute aqueous solution of a β-lactam antibiotic selected from the group consisting of cephalosporin C, deacetylcephalosporin C, deacetoxycephalosporin C and their 7-position deacylated compounds, said solution containing 0.01 to 5% (w/v) of the β-lactam antibiotic and 2 to 20% (v/v) of a lower alcohol selected from the group consisting of methanol, ethanol, propanol and butanol, to concentration at a temperature of 10° to 35° C. by means of a permeable poly-(ether/amide) membrane prepared by depositing a thin layer of an aqueous solution of an epichlorohydrin-ethylene diamine condensate on the finely porous surface of a polysulfone support membrane and subsequently contacting the said poly-(ether/amine) layer with a water immiscible solution of isophthalyldichloride.

4,455,307
ANTIHYPERTENSIVE USE OF TRIAZOLOBENZODIAZEPINES

Jackson B. Hester, Jr., Comstock Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 336,814, Jan. 4, 1982, abandoned. This application Jan. 5, 1983, Ser. No. 455,780
Int. Cl.³ A61K *31/55*; C07D *487/04*
U.S. Cl. 424—246 **18 Claims**

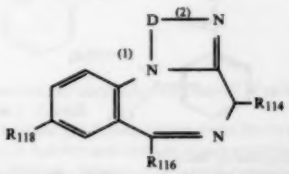
1. A method of treating hypertension in mammals which comprises administering to a mammal suffering from said disease an amount of a compound of formula I



I

wherein
(1)-A-(2) is (1)—CR_1=N—(2) or (1)—C(=X_1)—NR_{11}—(2);
wherein
R_1 is
(a) hydrogen;
(b) alkyl of 1 to 6 carbon atoms;
(c) chlorine, bromine or iodine;
(d) —CHX_2X_3 wherein X_2 is halogen; and X_3, being the same as or different from X_2, is hydrogen, methyl, ethyl, fluorine, chlorine, or bromine;
(e) trifluoromethyl;
(f) cyano or cyanomethyl;
(g) —X_4R_{12}, wherein X_4 is oxygen or sulfur, and R_{12} is alkyl of 1 to 3 carbon atoms or —$(CH_2)_2NR_{15}R_{16}$, wherein R_{15} and R_{16} are the same or different and are hydrogen or methyl;
(h) —$CH_2X_4R_{13}$, wherein R_{13} is hydrogen or alkyl of 1 to 3 carbon atoms, inclusive;
(i) 3-pyridyl;
(j) azetidino, pyrrolidino or piperidino;
(k) pyrrolidinomethyl;
(l) 4-methyl-1-piperazinyl; or
(m) c—$N(CH_2CH_2)_2X_4$;
wherein
R_{11} is methyl or ethyl; and
wherein
X_1 is oxygen or sulfur;
wherein
B is —CHR_4— or —NH—, wherein R_4 is hydrogen or methyl;
wherein
R_6 is
(a) phenyl;
(b) phenyl substituted at 1 or 2 positions with halogen, wherein, if disubstituted, the substituents are the same or different; or
(c) 2-pyridyl; and
wherein
R_8 is hydrogen, halogen, or —X_8R_{81}, wherein X_8 is sulfur, sulfinyl or sulfonyl and R_{81} is alkyl of 1 to 3 carbon atoms; with the provisos that
(i) R_1 is c—$N(CH_2CH_2)_2X_4$ and R_6 is phenyl only when R_8 is other than hydrogen;
(ii) R_1 is pyrrolidino only when R_8 is other than bromo or iodo;
(iii) R_1 is methyl, B is CHR_4 and R_4 is hydrogen only when
(a) R_8 is other than —SR_{81}, and
(b) R_6 is other than phenyl, o-fluorophenyl, 2,5-difluorophenyl, 2-chloro-5-fluorophenyl, or o-chlorophenyl;
(iv) R_1 is hydrogen, ethyl, n-propyl or isopropyl, and B is —CHR_4; or R_1 is methyl, B is —CHR_4, and R_4 is methyl, only when
(a) R_8 is other than —SR_{81}, and
(b) R_6 is other than phenyl; and
(v) R_1 is n-butyl, n-pentyl, n-hexyl or isomers thereof only when R_8 is other than SR_{81}; and
(vi) B is —NH— only when
(a) A is —CR_1=N—,
(b) R_1 is hydrogen or alkyl of 1 to 6 carbon atoms, and
(c) R_6 is other than 2-pyridyl;
or a pharmacologically acceptable acid addition salt thereof, effective to lower the mammal's systemic arterial blood pressure.

11. A compound of formula III



III

wherein
(1)-D-(2) is (1)—C(c—$N(CH_2CH_2)_2S$)=N—(2), or (1)—C(-c—$N(CH_2)_3$)=N—(2),
wherein
R_{14} is hydrogen or methyl;
wherein
R_{116} is
(a) phenyl;
(b) phenyl substituted at 1 or 2 positions with halogen wherein, if disubstituted, the substituents are the same or different; or
(c) 2-pyridyl; and
wherein
R_{118} is hydrogen, halogen or —X_9R_{91}, wherein X_9 is sulfur, sulfinyl, or sulfonyl and R_{91} is alkyl of 1 to 3 carbon atoms; with the proviso that (1)-D-(2) is (1)—C(-

c—N(CH$_2$CH$_2$)$_2$S)=N—(2) and R_{116} is phenyl only when R_{118} is other than hydrogen;
or a pharmacologically acceptable acid addition salt thereof.

4,455,308

ARTHROPOD REPELLENTS

Joel R. Smolanoff, Chalfont, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 56,179, Jul. 10, 1979, Pat. No. 4,389,401.
This application Sep. 29, 1982, Ser. No. 426,522
The portion of the term of this patent subsequent to Jun. 21, 2000, has been disclaimed.
Int. Cl.^{3} A01N *47/28, 47/38*
U.S. Cl. 424—248.57 **4 Claims**

1. A method for repelling arthropods which comprises applying to an appropriate surface an effective amount of N,N-bis-2-methyl-allyl-N'-propylurea.

3. A method for repelling arthropods which comprises applying to an appropriate surface an effective amount of tetrahydro-3-octyl-5-(2'-methylallyl)-4H-1,3,5-oxadiazin-4-one.

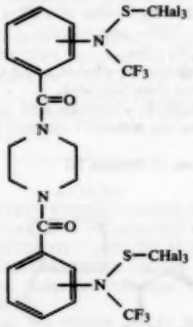
4,455,309

HALOMETHYL-THIOAMINO-BENZAMIDES, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Helmut Ritter; Wilfried Paulus, both of Krefeld; Engelbert Kühle, Bergisch-Gladbach, and Hermann Genth, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 20, 1981, Ser. No. 294,694
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1980, 3033863
Int. Cl.^{3} A61K *31/495*; C07D *241/04*; A01N *47/08*
U.S. Cl. 424—250 **7 Claims**

1. A bis substituted piperazine compound of the formula



wherein Hal represents halogen.

6. A process for protecting an industrial material against the action of a microorganism which comprises contacting said industrial material with a composition containing a bis substituted piperazine according to claim 1.

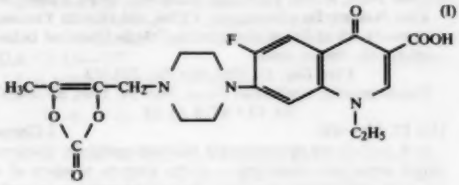
4,455,310

QUINOLINECARBOXYLIC ACID DERIVATIVE, AND ANTIBACTERIAL AGENT CONTAINING SAID COMPOUND AS ACTIVE INGREDIENT

Fumio Sakamoto, Osaka; Shoji Ikeda, Ibaraki, and Goro Tsukamoto, Toyonaka, all of Japan, assignors to Kanebo Ltd., Tokyo, Japan

Filed May 26, 1982, Ser. No. 382,353
Claims priority, application Japan, Jun. 10, 1981, 56-88061
Int. Cl.^{3} A61K *31/495*; C07D *403/14*
U.S. Cl. 424—250 **8 Claims**

4. An antibacterial composition comprising as an active ingredient an antibacterially effective amount of a compound of the formula



(I)

or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier therefor.

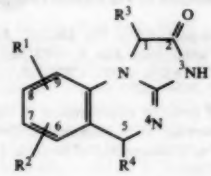
4,455,311

IMIDAZOQUINAZOLINE DERIVATIVES WHICH INHIBIT THE AGGREGATION OF BLOOD PLATELETS, INHIBIT GASTRIC SECRETION OR HAVE ACTIVITY ON THE CIRCULATORY SYSTEM

Frank Kienzle, Flüh, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jul. 28, 1982, Ser. No. 402,471
Claims priority, application Switzerland, Aug. 28, 1981, 5548/81; Jun. 17, 1982, 3744/82
Int. Cl.^{3} A61K *31/505*; C07D *487/04*
U.S. Cl. 424—251 **14 Claims**

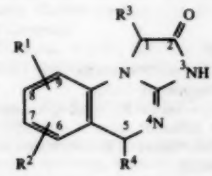
1. A compound of the formula



I

wherein one of R^1 or R^2 is hydrogen, chlorine, bromine, C_{1-4}-n-alkyl or C_{1-4}-n-alkoxy and the other is —N(R,R''), wherein R and R'' are C_{1-4}-n-alkyl or R and R'' taken together are tetramethylene or pentamethylene, and R^3 and R^4, independently, are hydrogen or methyl,
a tautomer thereof, when R^3 and/or R^4 are other than hydrogen, an enantiomer thereof, or a physiologically compatible acid addition salt thereof.

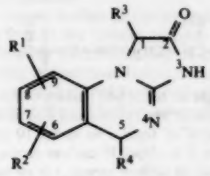
10. A method of treating or preventing cardiac insufficiency which comprises administering an effective amount of a compound of the formula



I

wherein one of R^1 or R^2 is hydrogen, chlorine, bromine, C_{1-4}-n-alkyl or C_{1-4}-n-alkoxy and the other is —N(R,R''), wherein R and R'' are C_{1-4}-n-alkyl or R and R'' taken together are tetramethylene or pentamethylene, and R^3 and R^4, independently, are hydrogen or methyl,
a tautomer thereof, when R^3 and/or R^4 are other than hydrogen, an enantiomer thereof, or a physiologically compatible acid addition salt thereof.

12. A method of treating gastric ulcers which comprises administering an effective amount of a compound of the formula



I

wherein one of R^1 or R^2 is hydrogen, chlorine, bromine, C_{1-4}-n-alkyl or C_{1-4}-n-alkoxy and the other is —N(R,R″), wherein R and R″ are C_{1-4}-n-alkyl or R and R″ taken together are tetramethylene or pentamethylene, and R^3 and R^4, independently, are hydrogen or methyl,

a tautomer thereof, when R^3 and/or R^4 are other than hydrogen, an enantiomer thereof, or a physiologically compatible acid addition salt thereof.

4,455,312

2-(O-CARBOXYPHENYLAMINO)-6H-PYRIMIDO(2,1-B)-QUINAZOLONE-6 AND DERIVATIVES THEREOF, AND APPLICATION AS ANTIPHLOGISTICS

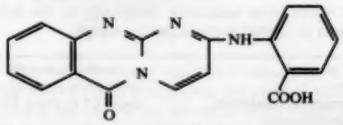
Vera A. Portnyagina, ulitsa Bozhenko, 13, Kievo-Svyatoshinsky raion, Boyarka; Valentina K. Karp, ulitsa Shamrylo, 12-b, kv. 16, Kiev; Irina S. Barkova, ulitsa Pirogovskaya, 29, kv. 9, Kiev; Fedor P. Trinus, Brest-Litovsky prospekt, 12, kv. 13, Kiev; Nikolai A. Mokhort, ulitsa Serafimovicha, 6, kv. 77, Kiev; Alexandra G. Fadeicheva, ulitsa Karla Marxa, 9, kv. 29, Kiev; Galina I. Kozhushko, ulitsa Dobrokhotova, 5, kv. 72, Kiev; Tatyana K. Ryabukha, ulitsa Leiptsigskaya, 12, kv. 35, Kiev; Alexandr G. Pantelcimonov, Kharkovskoe shosse, 12, kv. 47, Kiev; Viktor V. Kljushin, ulitsa Korostyshevskaya, 24, Kiev; Jury N. Dobrovolsky, ulitsa Geroev Dnepra, 26, kv. 95, Kiev; Larisa M. Kirichek, ulitsa Semashko, 12, kv. 89, Kiev; Adolf A. Medvedovsky, ulitsa Yanvarskogo Vosstania, 3, kv. 85, Kiev; Galina A. Getman, ulitsa Miljutenko, 10/1, kv. 147, Kiev; Jury D. Usenko, ulitsa Pushkinskaya, 13, kv. 54, Kiev; Viktor M. Sidelnikov, ulitsa Bogomoltsa, 11/12, kv. 12, Kiev; Nikolai F. Danilevsky, ulitsa Chekistov, 11/12, kv. 12, Kiev, and Yakov P. Solsky, Bulvar Shevchenko, 35, kv. 12, Kiev, all of U.S.S.R.

Filed Aug. 19, 1982, Ser. No. 409,761

Int. Cl.³ A61K *31/505;* C07D *487/04*

U.S. Cl. 424—251 **12 Claims**

1. 2-(o-carboxyphenylamino)-6H-pyrimido(2,1-b)-quinazolone-6, having the structural formula



5. A chemotherapeutic antiphlogistic containing, as an active ingredient, a substance selected from the group consisting of 2-(o-carboxyphenylamino)-6H-pyrimido(2,1-b)-quinazolone-6, derivatives of 2-(o-carboxyphenylamino)-6H-pyrimido(2,1-b)-quinazolone-6, and a pharmaceutical base material.

4,455,313

FUNGICIDAL CONTROL EMPLOYING SUBSTITUTED PYRIDINOLS

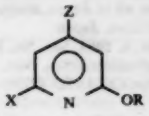
Robert J. Ehr, Pittsburg, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 20, 1982, Ser. No. 409,793

Int. Cl.³ A01N *43/40, 55/02*

U.S. Cl. 424—263 **14 Claims**

1. A method for protecting plants planted in soil containing soil-borne plant disease organisms of the Genera *Rhizoctonia* and *Sclerotium* from attack by said soil-borne plant disease organisms which comprises contacting plants or plant parts with a non-phytotoxic plant protecting amount of a plant protectant of the formula



wherein

X represents bromo, chloro, fluoro or iodo;

Z represents trichloromethyl, trifluoromethyl, dichloromethyl, dichlorofluoromethyl or chlorodifluoromethyl and

R represents hydrogen, alkali metal, alkaline earth metal, zinc, iron, aluminum, copper, manganese or $—NR^1R^2R^3$ wherein R^1, R^2 and R^3 are each independently hydrogen or alkyl of 1 to 4 carbon atoms, in intimate admixture with an inert adjuvant therefor.

4,455,314

PENICILLIN DERIVATIVES

George Burton, Carshalton, and Desmond J. Best, Southwater, both of England, assignors to Beecham Group p.l.c., England

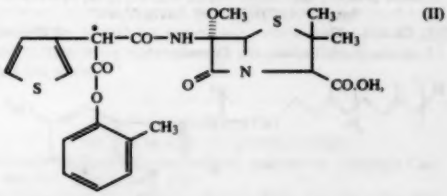
Filed Jan. 20, 1983, Ser. No. 459,668

Claims priority, application United Kingdom, Jan. 22, 1982, 8201751

Int. Cl.³ A61K *31/43;* C07D *499/56*

U.S. Cl. 424—271 **19 Claims**

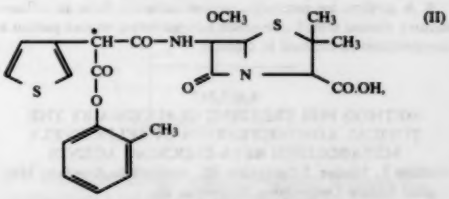
1. 6,α-Methoxy-6,β-[2-(2′-methylphenoxycarbonyl)-2-(thien-3′-yl)acetamido]penicillanic acid of formula (II):



(II)

a pharmaceutically acceptable salt thereof or an in vivo hydrolysable ester thereof.

6. A pharmaceutical composition useful for treating bacterial infections in humans and animals which comprises an antibacterially effective amount of 6,α-methoxy-6,β-[2-(2′-methylphenoxycarbonyl)-2-(thien-3′-yl)acetamido]penicillanic acid of formula (II):



(II)

a pharmaceutically acceptable salt thereof or an in-vivo hydrolysable ester thereof, in combination with a pharmaceutically acceptable carrier.

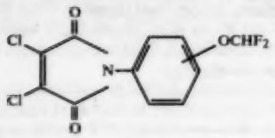
4,455,315
N-(DIFLUOROMETHOXY SUBSTITUTED PHENYL)-DICHLOROMALEIMIDES USED IN AGRICULTURAL AND HORTICULTURAL FUNGICIDAL METHODS

Kazuhiro Kojima, Hiratsuka; Haruaki Ito, Kawasaki, and Hiroshi Kubo, Yokohama, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 6, 1981, Ser. No. 318,982
Claims priority, application Japan, Nov. 10, 1980, 55-156950
Int. Cl.³ C07D *43/36*
U.S. Cl. 424—274 **3 Claims**

1. A method for controlling damage to agricultural and horticultural crops caused by plant pathogens, which comprises:

applying an effective amount of an agricultural and horticultural fungicide which comprises a 2,3-dichloro-N-difluoromethoxyphenylmaleimide of the formula (I):



(I)

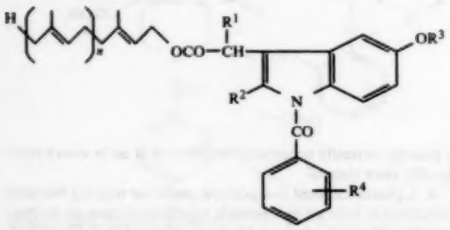
as an active ingredient.

4,455,316
POLYPRENYL ESTERS OF ACEMETHACINS AND ANTI-INFLAMMATORY METHOD OF USE THEREOF

Isao Yamatsu, Ushikumachi; Shinya Abe, Kukisakimura; Yuichi Inai, Tokyo; Takeshi Suzuki, Ushikumachi; Kensaku Kinoshita, Ahiko; Mannen Mishima, Yatabemachi; Yoshinori Katoh, Misato; Seiichi Kobayashi, Tsuchiura; Manabu Murakami, Toyosatomachi, and Kouzi Yamada, Toride, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Jul. 8, 1982, Ser. No. 396,184
Claims priority, application Japan, Jul. 23, 1981, 56-114371
Int. Cl.³ C07D *209/28*; A61K *31/405*
U.S. Cl. 424—274 **8 Claims**

1. A compound having the formula:



in which R^1 and R^2 each represent hydrogen or lower alkyl, R^3 represents lower alkyl, R^4 represents hydrogen, halogen or lower alkyl, and n is an integer of from 1 to 3.

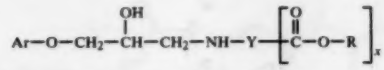
8. A method for treating a patient suffering from an inflammatory disease which comprises administering to said patient a composition as claimed in claim 1.

4,455,317
METHOD FOR TREATING GLAUCOMA BY THE TOPICAL ADMINISTRATION OF SELECTIVELY METABOLIZED BETA-BLOCKING AGENTS

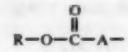
William L. Matier, Libertyville, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jun. 23, 1981, Ser. No. 276,465
Int. Cl.³ A61K *31/24*
U.S. Cl. 424—309 **16 Claims**

1. A method for treating glaucoma or for lowering intraocular pressure in a mammal, which comprises topically applying to the eye of such mammal an intraocular pressure-lowering effective amount of a compound represented by the formula:



wherein Y is a straight or branched carbon chain of from 1 to about 10 carbon atoms or aralkyl of from 8 to about 20 carbon atoms; R is lower alkyl of from 1 to about 10 carbon atoms, lower alkenyl of from 2 to about 10 carbon atoms, lower alkynyl of from 3 to about 10 carbon atoms; x is an integer from 1 to about 3; Ar is phenyl or napthyl optionally additionally substituted with lower alkyl of from 1 to about 10 carbon atoms, lower alkenyl of from 2 to about 10 carbon atoms, lower alkynyl of from 2 to about 10 carbon atoms, lower alkoxy of from 1 to about 10 carbon atoms, halogen, or a group of the formula



wherein A is a direct bond, lower alkylene of from 1 to about 10 carbon atoms, or lower alkenylene of from 2 to about 10 carbon atoms; or a pharmaceutically acceptable salt thereof.

4,455,318
SIMULATED ADIPOSE TISSUE

Terrence J. Maurice, Colborne; Edward D. Murray, Winnipeg, and Jennifer M. Agnes, Cobourg, all of Canada, assignors to General Foods Inc., Don Mills, Canada

Continuation of Ser. No. 88,493, Oct. 26, 1979, Pat. No. 4,388,337. This application Feb. 7, 1983, Ser. No. 464,635
Claims priority, application Canada, Oct. 10, 1978, 313038
Int. Cl.³ A23J *3/00*
U.S. Cl. 426—104 **3 Claims**

1. A sliceable simulated bacon product consisting of a heat coagulated mass of separate red and white layers, said red layer consisting essentially of the following components in recited percentages by weight:

Water	about 40 to about 65
Fat	about 10 to about 25
Protein isolate	about 6 to about 24
Albumen	up to about 15
Proteinaceous filler	0 to about 15
Colour and flavouring agents	to taste
Thickening agent	0 to about 2

and said white layer consisting essentially of the following components in recited percentages by weight:

Lipid material	about 65 to about 80
Water	about 15 to about 25
Proteinaceous emulsifiers, said proteinaceous emulsifiers consisting of:	about 2.5 to about 7.0
(i) Protein micellar mass	about 1 to about 4.0
(ii) Egg white, and	about 1 to about 2.5
(iii) Gelatin	about 0.1 to about 1.0
Protein fibres	about 15 to about 45.

4,455,319
METHOD OF EFFECTING LONG WAVELENGTH RADIATION COOKING

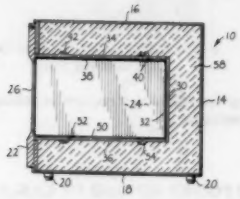
Robert H. Clark, Columbia, Mo., assignor to Toastmaster, Inc., Columbia, Mo.

Filed Jul. 6, 1982, Ser. No. 395,808
Int. Cl.³ A47J *27/62*; A21B *2/00*; A23L *1/00*
U.S. Cl. 426—233 **2 Claims**

1. A method of effecting long wavelength radiation cooking, said method comprising the steps of:

providing an enclosed cooking space bounded at the top by a top radiator panel and at the bottom by a bottom radiator panel, each panel being aluminum and having upper and lower surfaces;

coating the lower surface of the top radiator panel and the upper surface of the bottom radiator panel with a cured ceramic coating material having an emissivity near unity and a curing temperature below the melting temperature of aluminum, said coated lower and upper surfaces respectively forming the top and bottom surfaces of said cooking space;



attaching electrically resistive heating elements to the upper surface of the top radiator panel and to the lower surface of the bottom radiator panel in intimate thermal contact with both panels;

inserting food into said cooking space; and

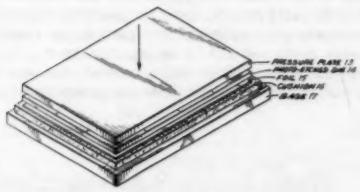
applying electric current to said heating elements to heat said top and bottom panels to temperatures in the range of 400° F. to 850° F., whereby said coating material is heated to radiate heat at long wavelength into the cooking space for a period of time sufficient to cook said food.

4,455,320

METHOD OF MAKING CHOCOLATE CANDY SCULPTURE OF PHOTO IMAGE

Victor Syrmis, New York, N.Y., assignor to Chocolate Photos, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 429,298
Int. Cl.³ A23G *1/22*; B65D *85/60*
U.S. Cl. 426—383 **11 Claims**



5. A method of providing a sculptured image onto a chocolate candy from a photo comprising the steps of tracing selected features and outlines of the photo image onto the rear side of the photo to form an adapted image, photo etching said adapted image onto a die plate, pressing a sheet of foil against said photo-etched die plate to create a plurality of embossments of said adapted image on said foil with each embossment surrounded by and separated from adjacent embossments by an exposed marginal strip of said foil, providing a mold for molding the chocolate candies wherein the mold has a plurality of cavities each corresponding in size and position to said embossments and being open at both of the top and bottom ends, closing one of said ends of each cavity by securing said embossed foil thereto with the embossed image oriented outward of the cavity, pouring liquid chocolate into the other of said ends of each cavity, hardening said chocolate, and separating the mold from the chocolate with the foil remaining attached to said molded chocolate candy to form an array, the method comprising the further steps of providing a tray having a plurality of recesses to correspond in position and size to said array of molded candies attached to said foil, each recess having side walls with top edges, a closed bottom and an open top, applying an adhesive to said top edges, positioning said array of candies into the array of recesses with said exposed marginal strips of foil contacting the adhesive on the top edges and becoming secured thereto, thus closing each candy within one recess.

4,455,321

POTATO SNACKS AND METHOD OF PREPARATION

Elmer F. Glabe, Northbrook; Perry W. Anderson, Niles, and Stergios Laftsidis, Chicago, all of Ill., assignors to Food Technology Products, Chicago, Ill.

Continuation-in-part of Ser. No. 376,421, May 10, 1982, abandoned. This application Aug. 11, 1983, Ser. No. 522,000
Int. Cl.³ A21D *2/02, 2/08*; A23L *1/216*
U.S. Cl. 426—549 **8 Claims**

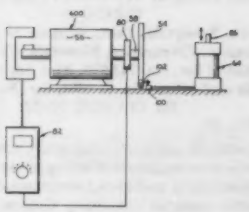
1. A process of producing a shaped snack product which comprises preparing a finely divided solid mixture of baking powder and dehydrated potato, said dehydrated potato containing a minor proportion by weight of fatty acid glyceride consisting essentially of mono- and diglycerides of fatty acids, said mixture optionally including a minor amount of a seasoning agent which does not destroy puffing, adding sufficient water to form an extrudable dough mixture, forming said dough mixture into a flat sheet, cutting pieces of predetermined size and shape from said sheet and baking said pieces, the composition of the dehydrated potato, the kind and proportion of the baking powder, the thickness of said pieces and the temperature and time of baking being controlled to produce a shaped, hollow potato product in which the sides are entirely enclosed, with the top and bottom being formed from the top and bottom of said cut pieces, and a cross section of said top and bottom being approximately one-half of the thickness of said cut pieces.

4,455,322

METHOD FOR COATING ITEMS

Hermann P. Weber, Tarzana, Calif., assignor to Techsight Corporation, Wilmington, Del.

Division of Ser. No. 273,461, Jun. 15, 1981, Pat. No. 4,345,546. This application Apr. 22, 1982, Ser. No. 370,901
Int. Cl.³ B05D *1/18*; G02B *1/10*
U.S. Cl. 427—8 **3 Claims**



1. A method for coating articles comprising the steps of:

(a) providing a volume of coating solution;

(b) suspending said articles above the surface of said volume of coating solution.

(c) lowering said articles completely into said coating solution;

(d) drawing the top end of said articles out of said coating solution with an initial low velocity of exiting;

(e) gradually increasing the velocity of exiting to a maximum velocity of exiting as the central portion of said articles exit said coating solution;

(f) gradually decreasing said velocity of exiting back to said low velocity as the bottom end of said articles exit said coating solution.

4,455,323

PROCESS FOR THE PREPARATION OF RADIOGRAPHIC INTENSIFYING SCREEN

Akio Ishizuka, Fujinomiya, and Akira Kitada, Kaisei, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 21, 1983, Ser. No. 506,391

Claims priority, application Japan, Jun. 22, 1982, 57-106187

Int. Cl.³ H01J *1/62, 1/64*

U.S. Cl. 427—65 **4 Claims**

1. A process for the preparation of a radiographic intensifying screen comprising a support and a phosphor layer, which comprises:

preparing a coating dispersion containing phosphor particles, a particulate hydrophobic silica in an amount of not more than 2% by weight of the phosphor particles, and a binder; and

applying the coating dispersion onto the support to form a phosphor layer.

4,455,324

METHOD OF PRODUCING ELECTROLUMINESCENT CELL

Yoshimi Kamijo, and Kazuhiko Kawachi, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 307,885, Oct. 2, 1981, Pat. No. 4,417,174. This application Jul. 18, 1983, Ser. No. 514,703

Claims priority, application Japan, Oct. 3, 1980, 55-138423; Dec. 12, 1980, 55-175452

Int. Cl.³ H01J *1/62, 63/04;* **B05D** *1/38, 3/02*

U.S. Cl. 427—66 **8 Claims**

1. A method of producing an electroluminescent cell comprising the step of applying a phosphorescent paste on a transparent electrode formed on a transparent insulating substrate and thereafter heat-treating it to form a luminescent layer, and the step of applying an insulating paste on said luminescent layer and thereafter heat-treating it to form an insulating layer.

4,455,325

METHOD OF INDUCING FLOW OR DENSIFICATION OF PHOSPHOSILICATE GLASS FOR INTEGRATED CIRCUITS

Reda Razouk, Sunnyvale, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Continuation of Ser. No. 243,990, Mar. 16, 1981, abandoned. This application Jan. 7, 1983, Ser. No. 456,200

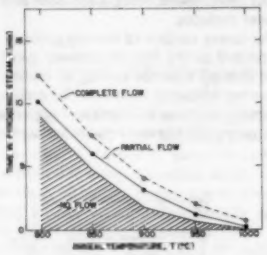
Int. Cl.³ H01L *21/02*

U.S. Cl. 427—85 **9 Claims**

1. In the manufacture of an integrated circuit, the method of flowing a silicon oxide glass containing phosphorous, said glass being deposited on an underlying semiconductor material, said semiconductor material containing dopants, which method comprises:

(a) raising the pressure acting on said glass, after said glass has been deposited on said semiconductor, above atmospheric pressure in an environment containing moisture for a selected period of time;

(b) simultaneously heating said glass to a selected temperature less than 1000° C. for said time, said pressure, time and temperature being selected so as to prevent redistribution of the dopant within the semiconductor material but sufficient to cause said glass to flow and density; and



(c) returning the resulting structure to atmospheric pressure and temperature.

4,455,326

FLUIDIZED POWER FILLING OF CABLE CORE UNITS

John N. Garner, Kingston, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Apr. 22, 1983, Ser. No. 487,739

Int. Cl.³ B05D *1/24;* **H01B** *3/30*

U.S. Cl. 427—117 **10 Claims**

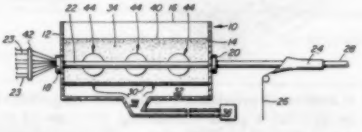
1. A method of fluidized powder filling of a cable core unit having a plurality of conductors comprising:

fluidizing a bed of said powder to form a fluidized bed with a defined upper surface;

with the conductors devoid of any surface covering which would prevent flow of powder between the conductors, passing the core unit with its conductors closed together through the fluidized bed and beneath its defined upper surface, the fluidized powder in the bed flowing between the conductors to fill voids within the unit; and

vibrating the unit laterally to the direction of its movement as it passes through the bed to move the conductors relative to one another and assist distribution of the powder by introducing energy pulsations into the powder by movement of a piston means submerged within the confines of the fluidized bed in at least one location spaced from the cable unit, the energy pulses being transmitted as successive waves through the particles to transfer the energy to the unit and set up the vibration.

2. Apparatus for powder filling of voids between closed together conductors of a cable core unit comprising:



a housing having inlet and outlet ends for the unit and sidewalls extending between the ends, the inlet and outlet ends, respectively, having an inlet and an outlet for the core unit;

a porous member located within the housing and extending across the housing at a level below the inlet and outlet;

a fluidizable bed of filling powder supported by the porous member and sufficient in quantity, upon fluidization, to define an upper surface of the bed above the outlet;

means for causing a flow of gas upwards through the porous member and into and through the powder to fluidize the powder; and

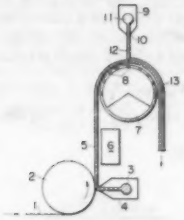
an energy pulsing device comprising at least one piston unit positioned within the housing to be submerged within the confines of the bed after its fluidization to introduce energy pulsations into the bed for transmittal of energy through the bed in wave form.

4,455,327

DUAL SURFACE FILM COATING OF RUNNING WEB

Tetsuo Yoshida, Fujinomiya; Motohiro Ujihara; Takeshi Watanabe, both of Minami-ashigara, and Akira Takagi, Fujinomiya, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 887,400, Mar. 16, 1978, abandoned. This application Apr. 23, 1982, Ser. No. 371,166
Claims priority, application Japan, Mar. 22, 1977, 52-31351
Int. Cl.³ B05D 1/02, 1/38, 5/00
U.S. Cl. 427—131 7 Claims



1. A method of applying a uniform coating to one surface of a continuously running support web to whose opposite surface at least one unsolidified layer of a first coating liquid has been applied, comprising the steps of:

(a) eliminating a fluidity of the first coating layer,

(b) applying a static gas pressure to the opposite surface of the web to support it,

(c) creating a thin jet film of a second coating liquid by pressure extrusion through a narrow elongated slit disposed a predetermined distance from and transverse to the running direction of said web, and

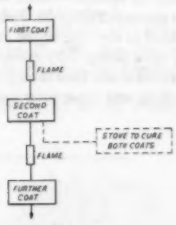
(d) causing the thin film to impinge against said one surface of the web in the region of its static pressure support at a velocity in the range of 0.5 to 3.0 meters/second to thereby minimize coating thickness variations along said running direction of said web.

4,455,328

COATING OF ARTICLES

Leonard A. Jenkins, Newbury, England, assignor to Metal Box Limited, Reading, England

Continuation-in-part of Ser. No. 704,833, Jul. 13, 1976, abandoned. This application May 17, 1978, Ser. No. 906,792
Int. Cl.³ B05D 3/08
U.S. Cl. 427—224 10 Claims



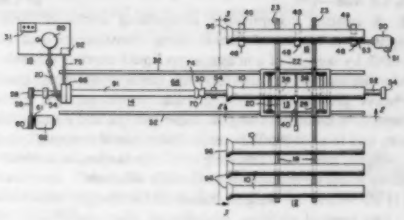
1. A method of coating a container body with at least two successive coatings, said method comprising the steps of applying a first fluid coating of a heat curable polymeric coating material to a container body; passing the coated container body rapidly before at least one flame source to only partially harden the first coating but sufficiently to permit application of a second fluid coating; applying a second fluid coating of organic coating material to the only partially hardened first coating; and thereafter fully curing the two coatings.

4,455,329

METHOD FOR COATING THE INTERIOR SURFACE OF METAL PIPES

William E. Snow, Birmingham, Ala., assignor to American Cast Iron Pipe Company, Birmingham, Ala.

Filed Oct. 22, 1982, Ser. No. 436,044
Int. Cl.³ B05D 7/22
U.S. Cl. 427—234 7 Claims



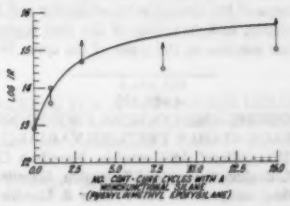
1. The method of coating the interior surface of a metal pipe comprising establishing a relative reciprocal motion between the pipe and a coating applicator in a direction parallel to the longitudinal axis of the pipe so as to cause the applicator to pass the length of the bore of the pipe while discharging from said applicator a thixotropic coating material in a 360° radial pattern and in a plane substantially perpendicular to the axis of the pipe to thereby build up a ring of said coating material of uniform thickness and form incrementally, but continuously, a coating of uniform thickness on the interior surface and thereafter rotating said pipe while the coating is wet to form a smooth continuous pipe lining.

4,455,330

METHOD OF INCREASING INSULATION RESISTANCE OF GLASS FIBERS

Gary M. Nishioka, Pataskala, and Sheldon P. Wesson, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 4, 1982, Ser. No. 405,119
Int. Cl.³ B05D 3/02; B32B 7/00, 17/02
U.S. Cl. 427—379 5 Claims



1. A method of improving the insulation resistance of glass fibers which comprises contacting the glass fibers with phenyldimethyl athoxysilane for a period sufficient to react said silane with at least some of the hydroxyl groups on the surface of the glass fibers.

4. The method of claim 1 in which said glass is contacted with said silane and cured from about 4 to about 15 times.

4,455,331

COATING COMPOSITION CONTAINING A RHEOLOGY CONTROL ADDITIVE OF SILICA AND POLYVINYL PYRROLIDONE

Robert J. Barsotti, Franklinville, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 403,305, Jul. 30, 1982, abandoned. This application Sep. 22, 1983, Ser. No. 534,780

Int. Cl.³ B05D *3/02*

U.S. Cl. 428—446 **19 Claims**

1. A coating composition comprising about 40–70% by weight of a binder of film-forming constituents and about 30–60% by weight of a nonaqueous liquid carrier, wherein the binder comprises a film-forming resin containing reactive carboxyl groups, hydroxyl groups, amide groups, glycidyl groups or a mixture of any of these groups and a crosslinking agent; and in addition the composition contains about 0.1–10% by weight, based on the weight of the binder, of a rheology control additive consisting essentially of about

(1) 80–99.5% by weight, based on the weight of the rheology control additive, of colloidal silica and

(2) 0.5–20% by weight, based on the weight of the rheology control additive, of a polyvinyl pyrrolidone and having a weight average molecular weight of about 3,000–500,000.

19. A substrate having a cured finish of the composition of claim 1 firmly adhered thereto.

4,455,332

PROCESS AND AN APPARATUS FOR EXTRACTING FINE DROPLETS OF PAINT FROM PAINT-SPRAYING UNITS

Paul Günther, Dietersheim, Fed. Rep. of Germany, assignor to Erich Sälzle, Munich, Fed. Rep. of Germany

Division of Ser. No. 330,939, Dec. 15, 1981, Pat. No. 4,401,051. This application Sep. 29, 1982, Ser. No. 426,554

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1980, 3047527

Int. Cl.³ B05D *1/02*

U.S. Cl. 427—421 **18 Claims**

1. A process of spraying shaped members with paint by atomizing the paint mixed with metal pigments or colour pigments to form a spray of droplets, directing the spray of droplets against the shaped member to be painted, the paint droplets in that part of the spray passing the article to be painted being taken up in a film of liquid running down the spray booth walls, the fluid laden with paint droplets being collected and conducted into a separating or settling vessel where the floating coagulated paint droplets are separated from the fluid and the fluid is recycled, the improvement comprising the use of an aqueous calcium chloride solution having a concentration of 0.01 to 0.5% by weight $CaCl_2$ and a pH value of 8 to 9.5 as fluid, flotation of the coagulated paint droplets with air, separated discharge of the floated paint coagulate and the calcium chloride solution and recycling of the thus regenerated calcium chloride solution to the walls of the spray booth.

4,455,333

DOUGHS AND COOKIES PROVIDING STORAGE-STABLE TEXTURE VARIABILITY

Charles A. Hong, Deerfield Township, Hamilton County, and William J. Brabbs, Springfield Township, Hamilton County, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 107,229, Dec. 26, 1979, abandoned, and Ser. No. 220,643, Dec. 29, 1980, abandoned, which is a continuation of said Ser. No. 107,229. This application Mar. 3, 1981, Ser. No. 240,051

Int. Cl.³ A21D *13/08*

U.S. Cl. 426—94 **48 Claims**

1. A sweetened food product in the form of a cookie dough preform, comprising a matrix made from cookie ingredients, and being characterized in having distributed therein discrete regions of dough containing readily crystallizable sugar, comprising a mono- or di-saccharide or mixture thereof that readily and spontaneously crystallizes at the water content and water activity conditions encountered in the dough, when baked; and discrete regions of dough containing crystallization resistant sugar, comprising a mono- or di-saccharide or mixture thereof which crystallizes, at the water content and water activity encountered in the dough, when baked, substantially more slowly than sucrose under the same conditions, whereby the product, when baked, provides a storage-stable plurality of textures, the regions containing readily crystallizable sugar providing a crisp texture, and the regions containing crystallization resistant sugar providing a chewy texture, and further characterized in that the regions providing a crisp crumb and the regions providing a chewy crumb provide crumbs having a

$$\left[\log \max \left(\frac{\text{stiffness}}{\text{plasticity}}\right) - \log \min \left(\frac{\text{stiffness}}{\text{plasticity}}\right)\right]$$

of at least about 1.75.

4,455,334

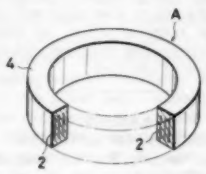
MOLDED GLAND PACKING

Kohzo Ogino; Tomikazu Shiomi; Yuichi Tanaka, and Seichi Yamashita, all of Hyogo, Japan, assignors to Nippon Pillar Packing Co. Ltd., Japan

Filed May 21, 1982, Ser. No. 380,938

Int. Cl.³ B32B *9/00*

U.S. Cl. 428—36 **6 Claims**



1. A molded gland packing, comprising a volute laminate of a composite sheet material compressed into a unified annular form of rectangular cross-section, the composite sheet material having a plurality of spirally-wound and bonded layers, each layer having an expanded graphite sheet and a reinforcing core member embedded in one side of the expanded graphite sheet, the reinforcing core being fully embedded within the cross-section of the laminate and facilitating insertion and removal of the molded packing and improving sealing performance.

4,455,335

HIGH DENSITY INFORMATION DISC LUBRICANTS

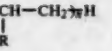
Pabitra Datta, Cranbury, and Eugene S. Poliniak, Willingboro, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,586

Int. Cl.³ G11B *3/70;* **B32B** *3/02*

U.S. Cl. 428—64 **3 Claims**

1. In a capacitance electronic disc having a lubricat layer thereon composed of a polyalkylethylene lubricant of the formula



wherein R is alkyl of 4 to 20 carbon atoms and n is an integer, the improvement wherein a polar additive, 9-phenylstearyl alcohol, is added to said lubricant in an amount effective to reduce the moisture sensitivity of the disc.

4,455,336

CERAMIC HONEYCOMB STRUCTURAL BODIES

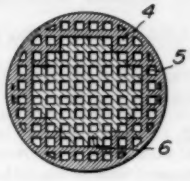
Yutaka Ogawa, Nagoya, and Seiichi Asami, Okazaki, both of Japan, assignors to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 240,501, Mar. 4, 1981, abandoned. This application Dec. 3, 1982, Ser. No. 446,512

Claims priority, application Japan, Mar. 14, 1980, 55-32232

Int. Cl.³ B23B *3/12*

U.S. Cl. 428—116 **3 Claims**



1. A ceramic honeycomb structural body, comprising:

an outer peripheral portion which comprises an outer peripheral wall and longitudinal channels formed by longitudinal porous walls, the longitudinal porous walls having transverse cross-sections; and

a central portion contiguous with the outer peripheral portion, and having longitudinal channels formed by longitudinal porous walls, the longitudinal porous walls of said central portion being transversely more porous than the transverse portion of longitudinal porous walls of said outer peripheral portion, the longitudinal channels of said outer peripheral portion being open.

4,455,337

PRODUCTION OF NET FROM SYNTHETIC POLYMERIC FILM

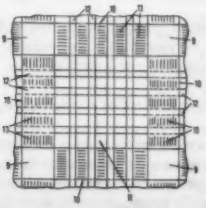
Ronald Lloyd, 63, Cambridge Rd., Sawbridgeworth, Hertfordshire, and Albert G. Patchell, 107, Dawley, Welwyn Garden City, Hertfordshire, both of England

Continuation of Ser. No. 923,230, Jul. 10, 1978, abandoned. This application Mar. 27, 1981, Ser. No. 248,047

Claims priority, application United Kingdom, Jul. 8, 1977, 28716/77

Int. Cl.³ B29C *17/02, 24/00*; B29D *7/24*

U.S. Cl. 428—134 **7 Claims**



1. An integral net having a first pattern of oriented strands defining a plurality of larger orifices covered by a second pattern of intersecting oriented strands defining a plurality of smaller orifices, said integral net produced by stretching in two directions a film of synthetic polymeric material having a major profiling consisting of a pattern of thicker and thinner areas, said thinner areas being provided with a minor profiling consisting of a pattern of thicker and thinner areas on a scale smaller than that of said major profiling at least one of said major profiling and minor profiling being split to form a net corresponding to said major or minor profiling.

4,455,338

REINFORCED FOAM BODY FOR VEHICLE DASHBOARDS, OR THE LIKE

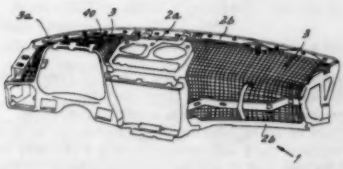
Helmut Henne, Wuppertal, Fed. Rep. of Germany, assignor to Gebr. Happich GmbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 231,036, Feb. 4, 1981, abandoned. This application Nov. 9, 1982, Ser. No. 440,289

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012007

Int. Cl.³ B32B *3/10, 5/18*; B60K *37/00*

U.S. Cl. 428—137 **19 Claims**



1. A reinforced, molded, foam body, including recesses and openings therein, comprising:

a reinforcing insert, comprising:

a hard, relatively unyielding part, extending over a first region of the foam body and shaped and placed for generally shaping the profile of the foam body; the hard part being shaped to define first open areas and second open areas through the hard part;

at least one soft and relatively yieldable part positioned to extend across and at least partially cover a respective second open area of the hard part, and the yieldable part will generally yield upon impact thereupon; the soft part being attached to and supported on the hard part adjacent the respective second open area;

at least one first open area remaining uncovered;

a layer of foam material; the reinforcing insert being embedded in the foam material layer and reinforcing the foam material layer, and the foam material layer having an external profile generally defined by the external profile of the insert; and the foam body having an opening therethrough at least one first open area of the insert.

4,455,339

PACKING FOR AN EXCHANGE COLUMN

Werner Meier, Elgg, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Jul. 14, 1982, Ser. No. 398,188

Claims priority, application Switzerland, Jul. 30, 1981, 4927/81

Int. Cl.³ B01D *47/02*

U.S. Cl. 428—185 **5 Claims**

1. A packing for an exchange column comprising

a plurality of corrugated lamellae disposed in vertical parallel relation, each said lamella having a plurality of corrugations disposed in angular crossing relation to the corrugations of an adjacent lamella to form a plurality of flow channels and

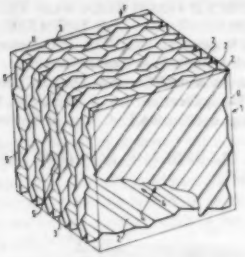
at least some of said lamellae having at least one steep por-

tion interrupting two adjacent flow channels with said corrugations thereof disposed in an alternating pattern relative to opposite sides of said respective lamella and relative to a plurality of steep portions.

3. A packing for an exchange column comprising

a plurality of corrugated lamellae disposed in vertical parallel relation, each said lamella having a plurality of corrugations disposed in angular crossing relation to the corrugations of an adjacent lamella to form a plurality of flow channels and

at least some of said lamellae having at least one steep portion interrupting two adjacent flow channels with said



corrugations thereof defining a pair of flow channels on each side of a respective steep portion.

4. A packing for an exchange column comprising

a plurality of corrugated lamellae disposed in vertical parallel relation, each said lamella having a plurality of corrugations disposed in angular crossing relation to the corrugations of an adjacent lamella to form a plurality of flow channels and

at least some of said lamellae having at least one steep portion interrupting two adjacent flow channels with said corrugations thereof disposed in pairs to each side of a respective steep portion.

4,455,340

FLEXIBLE MOLDED FOAM AND PROCESS FOR PREPARATION THEREOF

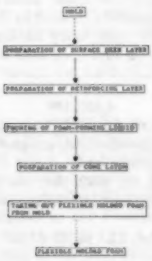
Toyohiko Okina, Anjo, Japan, assignor to Inoue MTP Kabushiki Kaisha, Nagoya, Japan

Continuation of Ser. No. 340,660, Jan. 19, 1982, abandoned. This application Jun. 24, 1983, Ser. No. 507,939

Claims priority, application Japan, Jul. 31, 1981, 56-120992

Int. Cl.³ B32B *3/26*

U.S. Cl. 428—215 **26 Claims**



1. A flexible molded foam comprising:

(a) a surface layer of elastic thin film having a thickness of 7 to 50μ, which consists essentially of a polyurethane linear polymer having a number-average molecular weight of 25,000 to 55,000;

(b) an intermediate reinforcing layer of elastic film having a thickness of 100 to 500μ, which comprises a three-dimensionally crosslinked polyurethane; and

(c) a core layer which comprises a semi-rigid polyurethane foam having an apparent density of 0.03 to 0.30 g/cm³;

wherein said layers are integrally molded in a desirable shape and wherein the surface layer and the intermediate reinforcing layer are bonded very tightly by free isocyanate groups on the molecule ends of the polyurethane linear polymer layer present prior to curing.

4,455,341

SIZED MULTIFILAMENT YARN OF AN AROMATIC POLYAMIDE, A YARN PACKAGE, A WOVEN FABRIC AND A PROCESS FOR MAKING SAID YARN

Evert Harteman, Arnhem, Netherlands, assignor to Akzo nv, Arnhem, Netherlands

Filed Nov. 20, 1981, Ser. No. 323,566

Claims priority, application Netherlands, Nov. 24, 1980, 8006393

Int. Cl.³ B32B *27/34;* **D02G** *3/00;* **D03D** *15/00*

U.S. Cl. 428—225 **14 Claims**

1. A multifilament yarn of poly-p-phenylene terephthalamide having a tenacity of at least 15 cN/Dtex and an initial modulus of at least 400 cN/Dtex, characterized in that the yarn is provided with a water-soluble size from a film-forming polyester derived from at least a dicarboxylic acid, at least a diol, and a sulphonated dicarboxylic acid.

4,455,342

ACRYLIC RESIN DISPERSIONS

Herbert Fink, Bickenbach; Heiner Kniese, Seeheim-Jugenheim; Norbert Suetterlin, Ober-Ramstadt; Klaus Mueller, Gross-Bieberau, and Werner Siol, Darmstadt, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jan. 5, 1983, Ser. No. 455,660

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1982, 3202093

Int. Cl.³ C08F *20/00*

U.S. Cl. 428—265 **6 Claims**

1. The method of reinforcing a textile which comprises applying an aqueous dispersion which is free of formaldehyde, formaldehyde-liberating substances, and acrylonitrile to said textile in an amount from 1 to 100 percent by weight of the fibers in said textile and then drying said textile at a temperature above 100° C., said dispersion comprising an aqueous phase and a copolymer dispersed therein, said copolymer comprising

(a) 70 to 96.25 weight percent of at least one member selected from the group consisting of alkyl esters of acrylic acid and of methacrylic acid having from 1 to 18 carbon atoms in the alkyl group, and mixtures of such esters with styrene;

(b) 2 to 30 weight percent of an hydroxyalkyl ester of an unsaturated polymerizable monocarboxylic or dicarboxylic acid having at least 2 carbon atoms in the hydroxyalkyl group;

(c) 1 to 10 weight percent of acrylamide or of methacrylamide;

(d) 0.05 to 3 weight percent of a crosslinking comonomer having at least two polymerizable double bonds;

(e) 0 to 5 weight percent of an unsaturated polymerizable monocarboxylic or dicarboxylic acid; and

(f) 0 to 20 weight percent of at least one further comonomer free of nitrile groups and formaldehyde-liberating groups.

4,455,343

AQUEOUS TREATING COMPOSITION FOR GLASS FIBER STRANDS USED TO PRODUCE MATS FOR THERMOPLASTICS

Chester S. Temple, McKees Rocks, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 29, 1980, Ser. No. 220,349
Int. Cl.³ B32B *15/00*
U.S. Cl. 428—285 **30 Claims**

1. In a method of forming glass fibers that are gathered into strands including the steps of

forming glass fibers from molten cones of glass at the tips of orifices in a bushing by attenuation;

sizing said glass fibers with an aqueous sizing composition;

gathering said fibers into one or more strands; and

collecting one or more glass fiber strands, the Improvement comprising:

sizing said glass fibers with an aqueous sizing composition comprising:

a. a combination of two organic silane coupling agents in an amount of about 0.5 to about 10 weight percent of the aqueous sizing composition, wherein one organic silane coupling agent is a vinyl containing organic silane coupling agent in an amount of about 60 to about 99 weight percent of the amount of the combined silane coupling agents and the other is a saturated amino organic silane coupling agent present in an amount of about 1 to about 40 weight percent of the combined silane coupling agents,

b. about 0.125 to about 7.6 percent by weight of a nonionic surfactant,

c. about 0.001 to about 1 percent by weight of a glass fiber lubricant,

d. about 0.1 to about 6 percent by weight of an organic peroxide free radical initiator having a half life exceeding 60 hours at 212° F. (100° C.) and 20 minutes at 300° F. (149° C.),

e. about 0.5 to about 15 weight percent of a film forming polymer selected from the group consisting of polyvinylalcohol, polyvinylacetate, polyvinylpyrrolidone and vinyl acetatemetholacrylamide copolymers, and

f. water in an amount to give a total solids in the range of about 1 to about 20 weight percent.

11. A needled mat of glass fiber strands for use in reinforcing thermoplastic polymers to give the reinforced thermoplastic polymers improved stampability, where the needled mat is comprised of:

a. a plurality of glass fiber strands distributed in a mat structure where the mat has sufficient integrity provided by needling, and

b. a coating on a substantial portion of the surface of the glass fibers in the strands, wherein the coating is of an aqueous sizing composition comprising:

(a) a combination of organic silane coupling agents present in the aqueous treating composition in an amount of about 0.5 to about 10 percent by weight, wherein one silane is a vinyl-containing organic silane coupling agent present in an amount of about 60 to about 99 weight percent of the combined silanes and another silane coupling agent is a saturated amino-organic silane coupling agent in an amount in the range of about 1 to about 40 weight percent of the combined silanes,

(b) about 0.5 to about 15 percent by weight of a film forming polymer selected from the group consisting of polyvinylalcohol, polyvinylacetate, polyvinylpyrrolidone and vinylacetatemetholacrylamide copolymers,

(c) about 0.125 to about 7.6 percent by weight of a nonionic surfactant,

(d) about 0.001 to about 1 percent by weight of a glass fiber lubricant,

(e) about 0.1 to about 6 percent by weight of a heat stable organic peroxide free radical initiator, and

(f) an amount of water to give a total solids for the composition in the range of about 1 to about 20 weight percent.

23. Thermoplastic laminate reinforced with needled glass fiber strand mat having improved stampability, where the laminate is produced by combining the needled glass fiber strand mat with an overlay and underlay of the thermoplastic polymer and the combination is heated under pressure, comprising:

a. needled glass fiber strand mat, wherein the glass fibers have a coating of a dried residue having around 2 to 10 percent moisture content, where the dried residue is of an aqueous sizing composition, comprising:

(a) a combination of organic silane coupling agents present in the aqueous treating composition in an amount of about 0.5 to about 10 percent by weight, wherein one silane is a vinyl-containing organic silane coupling agent present in an amount of about 60 to about 99 weight percent of the combined silanes and another silane coupling agent is a saturated amino-organic silane coupling agent in an amount in the range of about 1 to about 40 weight percent of the combined silanes,

(b) about 0.5 to about 15 percent by weight of a film forming polymer selected from the group consisting of polyvinylalcohol, polyvinylacetate, polyvinylpyrrolidone, and vinylacetatemetholacrylamide copolymers,

(c) about 0.1 to about 7.6 percent by weight of a nonionic surfactant,

(d) about 0.001 to about 1 percent by weight of a glass fiber lubricant,

(e) about 0.1 to about 6 percent by weight of a heat stable organic peroxide free radical initiator, and

(f) an amount of water to give a total solids in the range of about 1 to about 20 weight percent,

b. thermoplastic polymer selected from the group consisting of polyolefins, polyamides, polyalkylene terephthalate chemically coupling polypropylene, polypropylenes with small amounts of polyethylenes and homopolymeric and copolymeric substances such as (1) vinyl resins formed by the polymerization of vinyl halides or by the copolymerization of vinyl halides with unsaturated polymerizable compounds, e.g. vinyl esters; alpha, beta-unsaturated acids; alpha, beta-unsaturated esters; alpha, beta-unsaturated ketones; alpha, beta-unsaturated aldehydes; and unsaturated hydrocarbons such as butadienes and styrenes; (2) polyalpha-olefins such as polyethylene, polypropylene, polybutylene, polyisoprene and the like, including copolymers of polyalpha-olefins; (3) phenoxy resins; (4) poly amides such as polyhexamethylene adipamide, polyalphacaprolactam and the like, including copolymers of polyamides; (5) polysulfones; (6) polycarbonates; (7) polyacetals; (8) polyethylene oxide; (9) polystyrene, including copolymers of styrene with monomeric compounds such as acrylonitrile and butadiene; (10) acrylic resins as exemplified by the polymers of methyl acrylate, acrylamide, methylol acrylamide, acrylonitrile and copolymers of these with styrene, vinyl pyridines, ect.; (11) neoprene; (12) polyphenylene oxide resins; and (13) cellulose esters including the nitrate, acetate and propionate.

28. A method of forming needled mat of glass fiber strands for use in reinforcing thermoplastic polymers to give the reinforced thermoplastic polymer improved stampability, comprising:

a. forming glass fibers from molten cones of glass at the tips of orifices in a bushing by attenuation;

b. sizing said glass fibers with an aqueous sizing composition having:

(i) a combination of two organic silane coupling agents in an amount of about 0.5 to about 10 weight percent of the aqueous sizing composition, wherein one organic silane coupling agent is a vinyl-containing organic silane coupling agent in an amount of about 60 to about 99 weight percent of the amount of the combined silane coupling agents, and wherein the other is a saturated amino organic silane coupling agent present in an

amount of about 1 to about 40 weight percent of the combined silane coupling agents,

(ii) about 0.125 to about 7.6 percent by weight of a non-ionic surfactant,

(iii) about 0.001 to about 1 percent by weight of a glass fiber lubricant,

(iv) about 0.1 to about 6 percent by weight of an organic peroxide free radical initiator having a half life exceeding 60 hours at 212° F. (100° C.) and 20 minutes at 300° F. (149° C.),

(v) about 0.5 to about 15 weight percent of a film forming polymer, and

(vi) water in an amount to give a total solids for the sizing composition in the range from about 1 to about 20 weight percent;

c. gathering said fibers into one or more strands;

d. collecting said glass fiber strands;

e. dispersing a plurality of the glass fiber strands onto a moving conveyor belt to form a continuous glass fiber strand mat,

f. needling the continuous strand mat is a needle loom using barbed needles, wherein the presence of the treating composition on the glass fibers permits the use of less penetration by the needles into the mat and/or the use of smaller diameter needles to make the needled glass fiber strand mat more flowable when combined with thermoplastic polymer to produce a laminate which has improved stampability.

4,455,344

GRANULES WITH A NARROW PARTICLE SIZE DISTRIBUTION COMPRISING FILLER, CRYSTALLINE POLYOLEFIN POWDER AND BINDER

Kiyoshi Matsuyama; Kenji Ochi; Hiroyuki Ogawa, and Takatoshi Suzuki, all of Ehime, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 9, 1982, Ser. No. 440,467

Claims priority, application Japan, Nov. 9, 1981, 56-180049

Int. Cl.³ B32B *5/16, 27/06*

U.S. Cl. 428—327 **5 Claims**

1. Granules containing 60 wt% or more of a filler, 90 wt% or more of said granules having a particle size of $(\frac{1}{3})d_{50}^{b}$ to $3d_{50}^{b}$, wherein granules, said granules being produced by blending at least (a) 60 to 90 parts by weight of a filler having a mean particle size of 0.05 to 100μ, (b) 5 to 35 parts by weight of a crystalline polyolefin powder having a mean particle size (d_{50}^{a}) of 150 to 1,000μ, 90 wt% or more of the particles thereof having a particle size of $(\frac{1}{3})d_{50}^{a}$ to $2d_{50}^{a}$, and (c) 5 to 35 parts by weight of a binder having a melting point lower than that of said crystalline polyolefin powder by at least 10° C. at a temperature lower than the melting point of the crystalline polyolefin powder and higher than the melting point of the binder.

4,455,345

MAGNETIC RECORDING MEDIUM

Hajime Miyatuka, and Akira Kasuga, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 11, 1983, Ser. No. 457,319

Claims priority, application Japan, Jan. 11, 1982, 57-2420

Int. Cl.³ H01F *10/02*

U.S. Cl. 428—332 **10 Claims**

1. A magnetic recording medium, comprising:

a support having coated thereon;

a magnetic layer containing a ferromagnetic powder and a binder, said ferromagnetic metal powder having a specific surface area of 35 to 70 m^2/g, a saturation magnetization (σ_s) of 120 to 160 emu/g and a metal content of 75 to 98 wt%.

4,455,346

HEAT-SENSITIVE RECORDING PAPER

Akira Igarashi, and Sukenori Nakamura, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 21, 1982, Ser. No. 390,736

Claims priority, application Japan, Jun. 19, 1981, 56-94851

Int. Cl.³ B41M *5/18*

U.S. Cl. 346—200 **5 Claims**

1. A heat-sensitive recording paper comprising a paper support having coated thereon a heat-sensitive recording layer, which is surface-treated by passing said recording paper, after drying said heat-sensitive recording layer, through a pressure-applying member comprising a combination of a metal roll and an elastic roll of from 70 to 90 in Shore hardness wherein said heat-sensitive layer surface is contacted with said metal roll.

4,455,347

ACRYLIC FIBERS HAVING IRREGULAR-FORM SECTION AND PROCESS FOR PRODUCING THE SAME

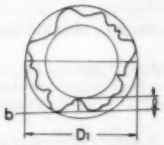
Mitsutoshi Ochi; Yoshinobu Kotera, and Masaki Sugiyama, all of Hiroshima, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1982, Ser. No. 365,690

Claims priority, application Japan, Apr. 3, 1981, 56/50340

Int. Cl.³ D02G *3/00*; **C09C** *1/56*

U.S. Cl. 428—369 **5 Claims**



1. An acrylic fiber having an irregular form section and a ramie-like feeling produced by throwing a spinning solution composed of an acrylonitrile copolymer and an organic solvent, the viscosity of which is 120 poises or less at 50° C., into a coagulating bath using a jet having a triangular orifice, and thereafter drawing, washing and drying said fiber, and, wherein the section of the fiber has unmethodical surface unevenness and has at least two concave parts which has a ratio of the length l of a perpendicular from a tangental line between adjacent convex parts of said unevenness to the deepest part of the concave part to the diameter D_1 of a circumscribed circle, wherein the ratio l/D_1 is 0.05 or more, and the surface of said fiber is covered with a plurality of discontinuous creases having an average width of 1μ or more and extending in the lengthwise direction of the fiber.

4,455,348

WIRE COATING COMPOSITION

Richard J. Pokorny, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 283,292, Jul. 14, 1981, Pat. No. 4,414,355.

This application Jul. 27, 1983, Ser. No. 517,768

Int. Cl.³ D02G *3/00*

U.S. Cl. 428—377 **8 Claims**

1. An article comprising a substrate having a composition coated on at least one surface thereof, said composition comprising an admixture of:

a. 35 to 70 weight percent of an anhydride copolymer which is the reaction product of:

(1) an alkyl or aryl substituted or unsubstituted unsaturated cyclic anhydride wherein each alkyl group contains up to 6 C atoms and the cyclic group contains 4 to 15 C atoms, and

(2) an unsaturated C_{10} to C_{24} aliphatic hydrocarbon;

b. 10 to 41 weight percent of a compatible, flexibilizing polymer which is selected from polyisobutylene and polymers of ethylene copolymerized with vinyl acetate, acrylate esters, methacrylate esters, and alpha-olefins, and

c. 10 to 40 weight percent of a hydrophobic, compatible, fluoroaliphatic radical-containing composition, said fluoroaliphatic radical being a monovalent, fluorinated, aliphatic radical having 5 to 14 carbon atoms which can be interrupted by divalent O atoms or trivalent N atoms bonded to C atoms; said fluoroaliphatic radical-containing composition being capable of providing water-repellancy to said admixture, and

d. up to 10 weight percent of a mercaptan compound.

4,455,349
MIXTURES COMPRISING HYDROCARBON ESTERS OF BENZENE CARBOXYLIC ACIDS AND FLUOROCARBON ESTERS OF BENZENE CARBOXYLIC ACIDS AND FIBERS CONTAINING THE SAME

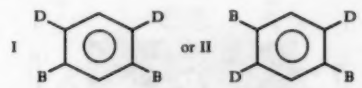
Oxenrider, Bryce C., Florham Park, and Alson K. Price, Chester, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 374,840, May 5, 1982, Pat. No. 4,410,717. This application Jul. 25, 1983, Ser. No. 516,506

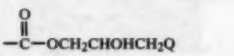
Int. Cl.[3] **D02G** *3/00;* **D06M** *13/46;* **C08G** *63/12*

U.S. Cl. 428—395 **14 Claims**

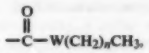
1. A mixture comprising between about 20 and 50 weight percent of a first component consisting of a compound having the formula



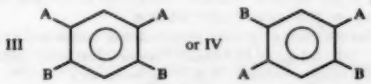
or mixtures thereof wherein B is



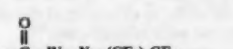
where Q is Cl, OH, H, or Br, and D is



with W being —O—, —NH—, —S— or —N(CH$_3$)— and n being an integer from 2 to 24 and between about 50 and 80 weight percent of an additional component, consisting of a compound of the formula



or mixtures thereof wherein A is



with W being —O—, —NH—, —S—, or —N(CH$_3$)—; wherein X is alkylene of 1–6 carbons and p is an integer from 3 to 15 with B being the same as in said first component.

7. A nylon fiber having incorporated therewith the mixture of claim 1.

8. A polyethylene terephthalate fiber having incorporated therewith the mixture of claim 1.

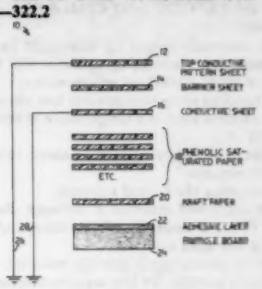
4,455,350
CONDUCTIVE LAMINATE SHEET MATERIAL AND METHOD OF PREPARATION

George R. Berbeco, West Newton, Mass., assignor to Charleswater Products, Inc., West Newton, Mass.

Filed Nov. 17, 1982, Ser. No. 442,277

Int. Cl.[3] **B65D** *73/02;* **B32B** *9/00*

U.S. Cl. 428—322.2 **23 Claims**



1. In a surface-covering laminate which comprises a plurality of resin-containing, fibrous sheet materials laminated together under heat and pressure to form a thermoset, cured, resin laminate, having a hard top surface, the laminate suitable for use as a surface covering, the improvement which comprises:

the laminate comprising one or more fibrous sheet materials containing an electrically conductive amount of a polyalkylene glycol in the fibrous sheet materials, to provide a laminate having a top surface resistivity of 10^{10} ohms per square inch or less, when tested in accordance with ASTM-D257.

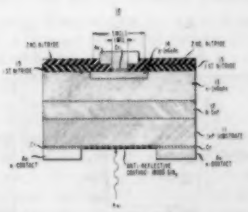
4,455,351
PREPARATION OF PHOTODIODES

Irfan Camlibel, Stirling; Shobha Singh, Summit; LeGrand G. Van Uitert, Morris Township, Morris County; John R. Zuber, Piscataway, and George J. Zydzik, Columbia, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 13, 1983, Ser. No. 503,795

Int. Cl.[3] **B32B** *9/06*

U.S. Cl. 428—450 **10 Claims**



1. A process for fabricating a semiconductor photodetector from a structure comprising InP substrate with the surface of the InP substrate at least partially covered with active material, said active material consisting generally of an n-type compound semiconductor, said compound semiconductor selected from the group consisting of InGaAs and InGaAsP comprising the step of depositing a protective layer of SiN on at least part of the surface of active material by plasma chemical vapor deposition characterized in that the temperature of the structure remains below 300 degrees C. until the thickness of the SiN layer is greater than 100 Angstroms.

4,455,352
MATERIALS SYSTEM FOR HIGH STRENGTH CORROSION RESISTANT BIMETALLIC PRODUCTS

Paul S. Ayres, Alliance, and Thomas L. Davis, Louisville, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Nov. 8, 1982, Ser. No. 440,119
Int. Cl.³ C23C 5/00; C21D 8/00
U.S. Cl. 428—485 **14 Claims**

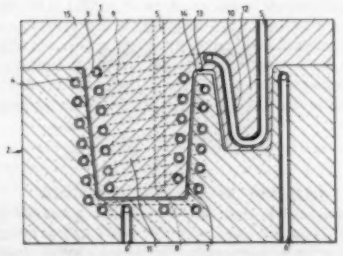
1. A specific materials system for bimetallic products suitable for low-temperature service up to about 500° F., having a yield strength of about 90,000 psi produced by:
(a) diffusion bonding an age-hardenable low alloy steel, to an austenitic stainless steel at a temperature of between 1700° F. and 2300° F.;
(b) heating the resulting composite to about 1650° F. for at least fifteen minutes;
(c) water quenching the heated material;
(d) aging the quenched material at between about 900° F. and 1100° F. for a maximum of one hour; and
(e) air cooling the aged material.

8. A method of producing a specific materials system for bimetallic products suitable for low-temperature service up to about 500° F., having a yield strength of about 90,000 psi which comprises:
(a) diffusion bonding an age-hardenable low alloy steel to an austenitic stainless steel at a temperature of between 1700° F. and 2300° F.;
(b) heating the resulting composite to about 1650° F. for at least fifteen minutes;
(c) water quenching the heated material;
(d) aging the quenched material at between 900° F. and 1100° F. for a maximum of one hour; and
(e) air cooling the aged material.

4,455,353
METHOD OF PRODUCING AN ARTICLE AND ARTICLE PRODUCED IN A MOULD WHICH DEFINES THE CONTOUR OF THE ARTICLE

Lars M. Bruce, Viken, Sweden, assignor to Uddeholms Aktiebolag, Hagfors, Sweden

PCT No. PCT/SE80/00350, 371 Date Sep. 28, 1981, 102(e) Date Sep. 28, 1981, PCT Pub. No. WO81/02126, PCT Pub. Date Aug. 6, 1981
PCT Filed Dec. 29, 1980, Ser. No. 306,917
Claims priority, application Sweden, Feb. 1, 1980, 8000799; Sep. 19, 1980, 8006580
Int. Cl.³ B22F 3/00, 3/26
U.S. Cl. 428—553 **26 Claims**

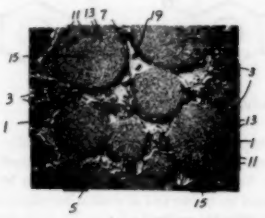


1. A method of producing an article comprising a sinterable material having a sintering temperature which, before sintering, is shapable into a desired shape and forms a porous body during sintering, and a matrix comprising a matrix metal of lower melting point than said sintering temperature of said sinterable material, said method comprising the steps of:
providing a mould having a mould surface defining the shape of said article;
providing at least one cooling passage a short distance from a surface of said article to be formed with a fine and controlled structure, said at least one cooling passage covering said surface or selected parts thereof for providing cooling to said surface or selected parts thereof;
filling said mould with powder or grains of said sinterable material;
heating said sinterable material to said sintering temperature to give a powder body;
melting said matrix metal to cause said matrix metal to filtrate into said powder body;
permitting said matrix metal to solidify;
passing coolant through said at least one passage during solidification of said matrix metal, such that a more rapid freezing of said matrix is obtained in a region close to said at least one passage than in more remote parts of said powder body, whereby sucking in of matrix metal from a surface region into said more remote parts of said powder body as a result of shrinkage of said matrix due to continued solidification is counteracted.

4,455,354
DIMENSIONALLY-CONTROLLED COBALT-CONTAINING PRECISION MOLDED METAL ARTICLE

Kenneth R. Dillon, and Richard L. Terchek, both of White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 14, 1980, Ser. No. 207,196
Int. Cl.³ B22F 3/26
U.S. Cl. 428—568 **14 Claims**



1. A shaped, homogeneous, monolithic metal article, comprising:
A. a skeleton, comprising
(i) a plurality of generally spherical domains having an average diameter less than about 200 micrometers, said domains, when viewed using backscattered electron imaging, comprising granules of chromium carbide homogeneously dispersed throughout a first solid solution comprising cobalt and chromium;
(ii) a second solid solution comprising cobalt and chromium, said second solid solution
(a) containing a greater percentage of cobalt and a lesser percentage of chromium than said first solid solution,
(b) being essentially free of carbides, and
(c) enveloping the majority of said spherical domains, the so-enveloped domains and second solid solution being interconnected to form said skeleton; and
(iii) iron or nickel as an additional component of said first and second solid solutions; and
B. infiltrant, comprising a continuous phase of metal or alloy occupying the volume of said article not occupied by said skeleton; said skeleton and said infiltrant thereby comprising two intermeshed matrices and said article being substantially void-free.

12. In a process for making infiltrated molded metal articles by molding in a flexible mold of a master a plastic mixture of spherical cobalt-containing powder and heat fugitive binder comprising thermoplastic material to form a green article of

predetermined shape and dimensions, removing said green article from said mold, heating said green article to remove said binder and consolidate said spherical cobalt-containing powder in the form of a porous, monolithic skeleton of particles of cobalt-containing metal, infiltrating said skeleton with a molten metal having a melting point that is at least 25° C. less than the melting point of the lowest melting of said cobalt-containing metal particles, and cooling the infiltrated skeleton, the improvement comprising adding to said spherical cobalt-containing powder up to about 11% by weight, based on the weight of said spherical cobalt-containing powder, of elemental iron or elemental nickel particles having an average particle diameter less than about 10 micrometers.

4,455,355

TIN-FREE STEEL CAN BODY

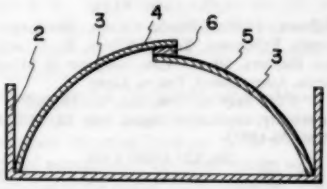
Tsuneo Inui, Tokuyama; Hitoshi Kuroda, Kudamatsu; Kenji Hizuka, Kudamatsu; Fumio Kunishige, Kudamatsu, and Yoshikazu Kondo, Kudamatsu, all of Japan, assignors to Toyo Kohan Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 209,302, Nov. 21, 1980, abandoned, which is a division of Ser. No. 062,890, Aug. 1, 1979, abandoned. This application Aug. 5, 1982, Ser. No. 405,935

Claims priority, application Japan, Mar. 30, 1979, 54-37084

Int. Cl.³ B23K *9/16, 9/24, 35/38*

U.S. Cl. 428—595 **3 Claims**



1. A can body of tin-free steel having a seam portion comprising said tin-free steel coated with a lacquer and a nylon adhesive, said tin-free steel comprising a first layer on a steel base, and a second layer on said first layer, said first layer being metallic chromium, said second layer being hydrated chromium oxide, the atomic ratio of sulfur in said second layer to the total chromium, oxygen, sulfur, and fluorine in said second layer being from 0.1 to 2.5%, the atomic ratio of fluorine in said second layer to the total chromium, oxygen, sulfur and fluorine in said second layer being from 0.5 to 10% said seam portion retaining a lacquer adhesion of about 39% to about 46% of its normal state lacquer adhesion after aging in hot water.

4,455,356

BELLOWS BOOT FOR SECONDARY BATTERY TERMINALS

James H. Barrett, Jr., 5055 Golf Creek Rd., Sylvania, Ohio 43560

Filed Apr. 4, 1983, Ser. No. 481,986

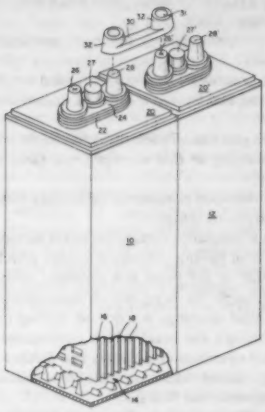
Int. Cl.³ H01M *4/00*

U.S. Cl. 429—66 **10 Claims**

1. In a battery having a housing and plates therein connected integrally to a terminal post that projects outwardly through an aperture in the top of said housing, the improvement comprising:

(A) circumferential grooves in said terminal post adjacent said aperture, and

(B) a flexible convoluted plastic connection extending between said terminal and said top of said housing around said aperture and being molded in said grooves and hermetically sealed to said housing to permit longitudinal



movement of said terminal due to expansion and contraction of said plates in said housing.

4,455,357

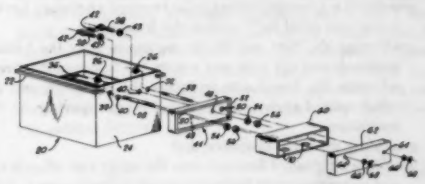
HOUSING ASSEMBLY FOR AIRCRAFT BATTERIES

David L. Rorer, and John E. James, both of Redlands, Calif., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed May 9, 1983, Ser. No. 492,956

Int. Cl.³ H01M *2/02*

U.S. Cl. 429—179 **3 Claims**



1. In a housing assembly for containing an aircraft battery and for supporting the battery electrical terminals, including a generally rectangular metal case having terminal openings in one side thereof through which the battery terminals extend, and a terminal enclosure which mounts to the one side of the case and encloses the battery terminals, the improvement comprising:

a generally rectangular bezel formed of an insulating material having cylindrical bosses which project from a first side of the bezel and which surround holes through the bezel which correspond in spacing to the terminal openings in the case, and further having a wall forming a frame around the cylindrical bosses which projects from a second side of the bezel opposite the first side, where the frame is designed to fit around and locate one end of the terminal enclosure, and where the cylindrical bosses are designed to slip over the battery terminals and through the terminal openings in the case to form insulated bushings when the first side of the bezel is placed adjacent the one side of the case;

first fastening means acting in cooperation with the battery terminals to fasten the bezel to the one side of the case; and

second fastening means attached to the case for fastening the terminal enclosure to the second side of the bezel.

3. A method of making a housing assembly for containing an

aircraft battery and for supporting the battery electrical terminals, comprising the steps of:

providing a generally rectangular metal case sized to contain the battery cells;

forming terminal openings and insert openings in one side of the case;

providing generally cylindrical threaded inserts, each closed at one end and having a reduced diameter threaded open end;

fitting the open end of each threaded insert into a respective insert opening so that the open end faces the exterior of the case;

extending threaded portions of the battery terminals through the terminal openings;

providing a generally rectangular bezel formed of an insulating material having cylindrical bosses which project from a first side of the bezel and surround terminal clearance holes through the bezel which correspond in spacing to the terminal openings in the case, having insert clearance holes through the bezel which correspond in spacing to the insert openings in the case, and further having a wall forming a frame which projects from a second side of the bezel opposite the first side;

positioning the first side of the bezel adjacent the one side of the case so that the cylindrical bosses slip over the threaded portions of the battery terminals and through the terminal openings in the case, thus forming insulated bushings for the terminals;

providing threaded terminal fasteners;

installing a threaded terminal fastener over the end of each terminal and tightening each fastener to hold the bezel against the one side of the case;

providing rods threaded at both ends;

inserting one end of each rod through a respective insert clearance hole and threading it into a respective insert;

providing a generally rectangular terminal enclosure having a first end sized to fit within the frame;

positioning the first end of the enclosure over the battery terminals and the rods and within the frame of the bezel, whereby the frame acts to locate the enclosure and the other end of each rod extends through openings in the enclosure;

providing threaded fasteners; and

installing a threaded fastener over the other end of each rod and tightening each fastener against the enclosure to hold it in place against the bezel.

4,455,358

ELECTROCHEMICAL CELLS HAVING A GELLED ANODE-ELECTROLYTE MIXTURE

Teresita O. Graham, Dobbs Ferry, and John T. Goodman, Croton-on-Hudson, both of N.Y., assignors to Duracell Inc., Bethel, Conn.

Filed Dec. 26, 1979, Ser. No. 106,996

Int. Cl.³ H01M *6/22*

U.S. Cl. 429—190 **20 Claims**

1. An electrochemical cell comprising an anode, an aqueous alkaline electrolyte solution, a separator and a cathode, said anode comprising an intimate gelled mixture of a powdered metal, aqueous alkaline electrolyte solution and an agent capable of gelling said mixture, said agent comprising a material capable of absorbing water, said agent comprising a carbohydrate backbone having water soluble side chains grafted thereon.

12. A powder-gel anode comprising a major portion of a consumable zinc anodic material, a minor amount of a starch-graft copolymer in which the copolymer contains carboxylate units, and an aqueous alkaline electrolyte solution.

4,455,359

TAMPER-PROOF DOCUMENT

Walter Pätzold; Werner Verburg, and Harald von Rintelen, all of Leverkusen, Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 26, 1982, Ser. No. 401,654

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1981, 3130032

Int. Cl.³ G03C *3/00*

U.S. Cl. 430—10 **10 Claims**

1. A tamper-proof document consisting of a support and a layer on the support containing gelatin and at least 10% by weight of particles smaller than 0.1 μm of a homo- or copolymer of an acrylic and/or methacrylic acid ester together with an emulsion having a photographic silver or dye image associated with the gelatin layer and at least the gelatin layer being covered with a transparent foil tightly adherent to the gelatin layer having an adhesive laminated on the foil and adhearing to the gelatin layer,

characterized by having a weld wherein the adhesive layer on the foil is adhered to the gelatin layer and the document that cannot be taken apart without destruction of the emulsion.

4,455,360

ELECTROPHOTOGRAPHIC TONER COMPRISING CINNAMIC ACID

Koji Ishikawa, Chiba; Hiroshi Ozawa, Kanagawa; Nobuki Kobayashi, Yokohama; Yoshio Kikuta, Zushi, and Kenichi Nakane, Hayama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed May 30, 1980, Ser. No. 154,910

Claims priority, application Japan, Jun. 13, 1979, 54-73489; Feb. 8, 1980, 55-13573

Int. Cl.³ G03G *9/08*

U.S. Cl. 430—109 **20 Claims**

1. A toner composition for use in the development of electrostatic latent images comprising a constituent resin and a carbon black colorant, said constituent resin containing a member selected from the group consisting of:

(a) a copolymer of cinnamic acid with a vinyl monomer selected from the group consisting of styrene, a styrene derivative, an ethylenically unsaturated carboxylic acid, an acrylic ester, a methacrylic ester, an itaconic ester, a fumaric ester, an organic amide, an ethylenic monoolefin, a vinyl ester of a lower aliphatic monocarboxylic acid and a mixture of two or more of said vinyl monomers;

(b) a mixture of uncombined cinnamic acid with a copolymer as defined in (a);

(c) a mixture of uncombined cinnamic acid with a polymer selected from the group consisting of styrene-resin, acrylic resin, styrene-acrylate copolymer resin, styrene-butadiene copolymer resin, epoxy resin, polyurethane resin, polyether resin, coumarone resin, maleinized rosin, rosin-modified phenolformaldehyde resin, cellulose resin, polyamide resin, silicone resin, polyvinyl butyral resin, phenolic resin and a mixture of two or more of said polymers;

(d) a mixture of a copolymer as defined in (a) with a polymer as defined in (c); and

(e) a mixture of uncombined cinnamic acid with a mixture as defined in (d), said constituent resin having a softening point of from room temperature to 170° C., and the cinnamic acid content of the constituent resin being from 1 to 25 parts by weight per 100 parts by weight of the constituent resin in the cases of cinnamic acid copolymerized with one or more vinyl monomers and from 0.1 to 25 parts by weight per 100 parts by weight of the constituent resin in the case of cinnamic acid present in the uncombined state.

4,455,361
PROCESS FOR PREPARING DEVELOPER MATERIALS FOR ELECTROSTATIC IMAGES

Toshiaki Narusawa, Sagamihara; Seiji Okada, Kawasaki; Kiyohide Muramatsu, Tokyo; Teruo Yagishita, Kawasaki, and Hirofumi Okuyama, Sagamihara, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 062,311, Jul. 30, 1979, abandoned. This application Feb. 9, 1981, Ser. No. 232,805

Claims priority, application Japan, Aug. 1, 1978, 53-93110; Mar. 26, 1979, 54-34221

Int. Cl.[3] G03G *9/10, 11/00*

U.S. Cl. 430—137 20 Claims

1. In a process for preparing a developer material for electrostatic images comprising the steps of: immersing core beads in an organic solution of a resin coating material; evaporating the organic solvent of said solution; drying said immersed beads and curing said resin material, thereby to obtain a coated carrier, blending toner materials and pulverizing said blended toner materials; and mixing the thusly obtained toner particles with said coated carrier; the improvement comprising:

(1) selecting said core beads to be of iron;

(2) using as said resin coating material a butadiene homopolymer which is 1,2-polybutadiene or cyclized cis-1,4-polybutadiene, or a mixture thereof, or a mixture of at least one of said homopolymers and a styrene/butadiene copolymer, each said homopolymer having a molecular weight in the range from 10,000 to 100,000, said resin coating material containing at least 7.5% by weight, based on the weight of said resin material, of butadiene in polymerized form;

(3) carrying out said drying of said immersed beads and said curing of said resin material by a rotary drying method wherein said immersed beads are put in a vessel and are dried and heated, while the vessel rotates so as to avoid aggregation of the coated carrier particles, whereby the resin coating is formed on said core iron beads;

(4) using as said toner materials:

(a) an effective amount in the range from 85 to 95% by weight of a binder resin, based on the weight of said toner materials, said binder resin comprising, based on the weight of said binder resin, at least 50% by weight of an epoxy resin of a molecular weight in the range from 900 to 8,000 and an epoxy equivalent in the range from 450 to 5500, and an effective amount up to 50% by weight of a styrene/alkyl methacrylate copolymer, the alkyl group of said copolymer having from 1 to 4 carbon atoms and said copolymer having a molecular weight in the range from 10,000 to 100,000,

(b) a colorant comprising, based on the weight of said toner materials, an effective amount up to 10% by weight of fine carbon and an amount in the range from about 0.5 to 8% by weight of a nigrosine dye, and

(c) an effective amount up to 8% by weight of a charge controlling agent, based on the weight of said toner materials, wherein said charge controlling agent comprises a material which is quaternary ammonium alkyl sulfonate with the alkyl group thereof having from 4 to 20 carbon atoms, di-(polyhydroxy ethoxy ethyl) octadecyl amine, or a polyamine; and

(5) said mixing of said obtained toner particles with said coated carrier being effected in the ratio of the total surface area of said carrier to the total projection area of said toner particles being in the range of from 1:0.5 to 1:2.0.

4,455,362
PREPARATION OF ENCAPSULATED ELECTROSTATOGRAPHIC TONER MATERIAL

Takashi Naoi, and Fujio Kakimi, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 24, 1982, Ser. No. 444,308

Claims priority, application Japan, Nov. 27, 1981, 56-190236

Int. Cl.[3] G03G *9/08*

U.S. Cl. 430—137 5 Claims

1. In a process for the preparation of an electrostatographic toner material comprising encapsulating a core material containing colorant with a shell material in an aqueous medium in the presence of a hydrophilic protective colloid to prepare encapsulated toner particles and drying the so prepared encapsulated toner particles, the improvement which comprises washing the encapsulated toner particles with an aqueous solution containing 0.3 to 10 percent by weight of at least one surface active agent selected from the group consisting of an anionic surface active agent and a nonionic surface active agent in advance of subjecting them to the drying procedure.

4,455,363
HEAT-DEVELOPABLE COLOR PHOTOGRAPHIC MATERIAL WITH POLYMERIC COLOR COUPLER

Hideki Naito; Hiroshi Hara, and Morio Yagihara, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 2, 1983, Ser. No. 471,375

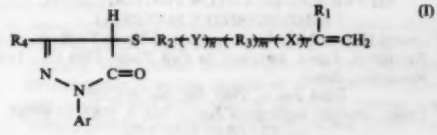
Claims priority, application Japan, Mar. 2, 1982, 57-32547

Int. Cl.[3] G03C *1/40, 5/54, 7/32*

U.S. Cl. 430—203 47 Claims

42. A method for forming a color image, comprising the steps of:

providing a heat-developable color photographic material comprising a support having thereon at least a light-sensitive silver halide, an organic silver salt oxidizing agent, a hydrophilic binder, a reducing agent for the silver halide and/or the organic silver salt oxidizing agent and a magenta color image forming polymer coupler latex which is capable of forming a diffusible dye upon coupling with an oxidized product of the reducing agent and which is a homopolymer or copolymer having a repeating unit derived from a monomer coupler represented by the following general formula (I):



wherein R_1 represents hydrogen, a lower alkyl group containing from 1 to 4 carbon atoms or a chlorine atom; R_2 and R_3, which may be the same or different, each represents an unsubstituted or substituted alkylene group which may be a straight chain or a branched chain, an unsubstituted or substituted arylene group or an unsubstituted or substituted aralkylene group; X represents —CONH— or —COO—; Y represents —O—, —S—, —SO—, —SO_2—, —CONH— or —COO—; Ar represents an unsubstituted or substituted phenyl group; R_4 represents an unsubstituted or substituted anilino group, an unsubstituted or substituted acylamino group or an unsubstituted or substituted ureido group; l represents 0 or 1; m represents 0 or 1; and n represents 0 or 1;

imagewise exposing the heat-developable photographic material; and

developing the exposed color photographic material by uniformly heating the material to form a diffusible dye and transferring the diffusible dye into an image receiving material.

4,455,364

PROCESS FOR FORMING METALLIC IMAGE, COMPOSITE MATERIAL FOR THE SAME

Nobumasa Sasa, Hino, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 5, 1982, Ser. No. 439,427

Claims priority, application Japan, Nov. 14, 1981, 56-181747; Nov. 14, 1981, 56-181748; Nov. 14, 1981, 56-181749

Int. Cl.³ C23F 1/02; C03C 15/00, 25/06; B44C 1/22

U.S. Cl. 430—299 23 Claims

12. A process for forming a metallic image, which comprises exposing a composite material, said composite material comprising a transparent support, a metallic thin layer over said support and a light-sensitive resin layer over said metallic thin layer, and treating said exposed composite material with a developing solution containing a metal chelating agent, to thereby develop said light-sensitive resin layer and said metallic thin layer in a single bath.

4,455,365

SILVER HALIDE PHOTOGRAPHIC MATERIAL FOR PHOTOMECHANICAL PROCESS AND REDUCTION PROCESSING METHOD THEREOF

Yukihide Urata; Yasuo Kasama; Shigenori Moriuchi, and Eiichi Okutsu, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 26, 1982, Ser. No. 411,784

Claims priority, application Japan, Aug. 26, 1981, 56-133889

Int. Cl.³ G03C 1/02, 5/42

U.S. Cl. 430—309 8 Claims

1. A silver halide photographic material for a photomechanical process, comprising:

a support base;

at least one light-sensitive silver halide emulsion layer on the support base containing silver halide particles in a hydrophilic colloidal binder, wherein the ratio of the amount of the hydrophilic colloidal binder to the silver halide in the light-sensitive layer is 0.5 or less by weight; and

at least one light-insensitive layer disposed on the light-sensitive layer, the light-insensitive layer being comprised of a hydrophilic colloidal binder coated in an amount of 1.0 or more times per unit area as the hydrophilic colloidal binder of the light-sensitive silver halide emulsion layer.

4,455,366

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Tsumoru Hirano; Makoto Umemoto, and Morio Yagihara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

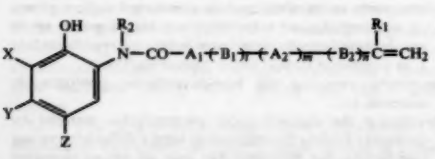
Filed Jun. 6, 1983, Ser. No. 501,725

Claims priority, application Japan, Jun. 4, 1982, 57-95797

Int. Cl.³ G03C 7/16, 7/26

U.S. Cl. 430—381 19 Claims

19. A method of forming a color image comprising developing an imagewise exposed silver halide color photographic light-sensitive material comprising a support having thereon a silver halide emulsion layer containing a cyan color image forming polymer coupler latex which is capable of forming a dye upon coupling with an oxidation product of an aromatic primary amine developing agent and which is a polymer or copolymer having a repeating unit derived from a monomer represented by the following general formula (I):



(I)

wherein R_1 represents a hydrogen atom, a lower alkyl group containing from 1 to 4 carbon atoms or a chlorine atom; R_2 represents a hydrogen atom or an unsubstituted or substituted alkyl group having from 1 to 4 carbon atoms; A_1 represents an unsubstituted or substituted alkylene group which may be a straight chain or a branched chain; A_2 represents an unsubstituted or substituted alkylene group which may be a straight chain or a branched chain, an unsubstituted or substituted aralkylene group or an unsubstituted or substituted phenylene group; B_1 represents —O—, —S—, —SO—, —SO_2—, —CONH— or —COO—; B_2 represents —NHCO— or —OCO—; X represents a halogen atom; Y represents a hydrogen atom or a lower alkyl group having from 1 to 5 carbon atoms; Z represents a hydrogen atom, a halogen atom or a substituted alkoxy group; l represents 0 or 1; m represents 0 or 1; and n represents 0 or 1.

4,455,367

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Yoshio Seoka, and Kozo Aoki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

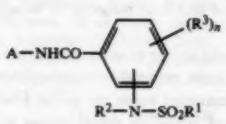
Filed Apr. 19, 1982, Ser. No. 369,768

Claims priority, application Japan, Apr. 20, 1981, 56-59415

Int. Cl.³ G03C 1/46

U.S. Cl. 430—505 29 Claims

29. A silver halide color photographic light-sensitive material comprising a support having thereon a red-sensitive silver halide emulsion layer containing particles of a coupler solvent comprising a cyan dye forming coupler represented by the following general formula (I)



(I)

wherein A represents a cyan coupler residue, and the —NHCO— group does not bond to A in the active position of A; R^1 represents a substituted or unsubstituted alkyl group or a substituted or unsubstituted aryl group; R^2 represents a hydrogen atom or a substituted or unsubstituted alkyl group; R^3 represents a hydrogen atom, a halogen atom, an alkyl group or an alkoxy group; and n represents an integer of 1 to 3, and when n is 2 or more R^3 may be the same or different, and a coupler solvent having a dielectric constant of 2.5 to 5 at least one green-sensitive silver halide emulsion layer containing a magenta color forming coupler and at least one blue-sensitive silver halide emulsion layer containing a yellow color forming coupler.

4,455,368

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING A UV ABSORBING POLYMER LATEX

Tetsuro Kojima; Shingo Ishimaru; Naohiko Sugimoto, and Tadashi Ikeda, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 14, 1983, Ser. No. 484,813

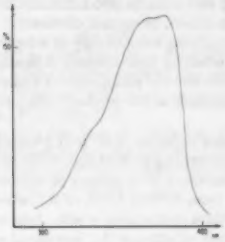
Claims priority, application Japan, Apr. 16, 1982, 57-63602

Int. Cl.³ G03C 1/78

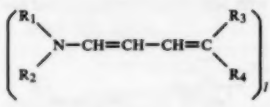
U.S. Cl. 430—507 28 Claims

1. A silver halide photographic light-sensitive material comprising a support having thereon a light-sensitive silver halide emulsion layer and a light-insensitive layer, the photographic light-sensitive material containing, in at least one layer selected from the light-sensitive silver halide emulsion layer and the light-insensitive layer, an ultraviolet ray absorbing polymer latex which comprises a homopolymer or a copolymer having a repeating unit derived from a monomer represented by the

following general formula (II) in which at least one ultraviolet

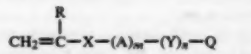


ray absorbing compound represented by the following general formula (I) is loaded:



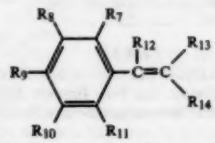
(I)

wherein l represents an integer of 1 or 2; R_1 and R_2, which may be the same or different, each represents a hydrogen atom, an alkyl group having from 1 to 20 carbon atoms or an aryl group having from 6 to 20 carbon atoms, provided that the both of R_1 and R_2 do not simultaneously represent hydrogen atoms, and further, R_1 and R_2 may combine to form an atomic group necessary to form a cyclic amino group; R_3 represents a cyano group, —$COOR_5$, —COR_5 or —SO_2R_5; and R_4 represents a cyano group, —$COOR_6$, —COR_6 or —SO_2R_6; wherein R_5 and R_6 each represents an alkyl group having from 1 to 20 carbon atoms or an aryl group having from 6 to 20 carbon atoms, and further R_5 and R_6 may combine to form an atomic group necessary to form a 1,3-dioxocyclohexane nucleus, a barbituric acid nucleus, a 1,2-diaza-3,5-dioxocyclopentane nucleus or a 2,4-diaza-1-alkoxy-3,5-dioxocyclohexene nucleus; and when l is 2, R_1, R_2 and R_5 each may further represent an alkylene group or an arylene group and at least one of R_1, R_2 and R_5 represents an alkylene group or an arylene group:



(II)

wherein R represents a hydrogen atom, a lower alkyl group having from 1 to 4 carbon atoms or a chlorine atom; X represents —CONH—, —COO— or a phenylene group; A represents a linking group selected from an alkylene group having from 1 to 20 carbon atoms or an arylene group having from 6 to 20 carbon atoms; Y represents —COO—, —OCO—, —CONH—, —NHCO—, —SO_2NH—, —NHSO_2—, —SO_2— or —O—; m represents 0 or an integer of 1; n represents 0 or an integer of 1; and Q represents an ultraviolet ray absorbing group represented by the following general formula (III):



(III)

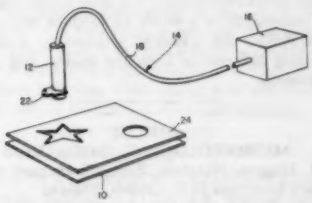
wherein R_7, R_8, R_9, R_{10} and R_{11}, which may be the same or different, each represents a hydrogen atom, a halogen atom, an alkyl group having from 1 to 20 carbon atoms, an aryl group having from 6 to 20 carbon atoms, an alkoxy group having from 1 to 20 carbon atoms, an aryloxy group having from 6 to 20 carbon atoms, an alkylthio group having from 1 to 20 carbon atoms, an arylthio group having from 6 to 20 carbon atoms, an amino group, an alkylamino group having from 1 to 20 carbon atoms, an arylamino group having from 6 to 20 carbon atoms, a hydroxyl group, a cyano group, a nitro group, an acylamino group, a carbamoyl group, a sulfonyl group, a sulfamoyl group, a sulfonamide group, an acyloxy group or an oxycarbonyl group, and R_7 and R_8, R_8 and R_9, R_9 and R_{10} or R_{10} and R_{11} may form a 5- to 6-membered ring by ring closure; R_{12} represents a hydrogen atom, an alkyl group having from 1 to 20 carbon atoms or an aryl group having from 6 to 20 carbon atoms; R_{13} represents a cyano group, —$COOR_{15}$, —$CONHR_{15}$, —COR_{15} or —SO_2R_{15}; R_{14} represents a cyano group, —$COOR_{16}$, —$CONHR_{16}$, —COR_{16} or —SO_2R_{16}; and R_{15} and R_{16} each represents an alkyl group having from 1 to 20 carbon atoms or an aryl group having from 6 to 20 carbon atoms; and at least one of R_7, R_8, R_9, R_{10}, R_{11}, R_{12}, R_{13} and R_{14} bonds to the vinyl group through the linking group.

4,455,369

METHOD OF CREATING IMAGE ON LIGHT SENSITIVE SHEET

Norina M. Purro, 422 First Ave., East Greenwich, R.I. 02818

Filed Oct. 19, 1982, Ser. No. 435,150
Int. Cl.³ G03C 7/00
U.S. Cl. 430—357 **7 Claims**



1. A method of painting with light on a color photographic sheet comprising:

a. manually passing a movable light probe, of the type which emits a narrow light beam of a preselected color and intensity, over selected areas of said sheet using freehand strokes under darkroom conditions to selectively expose said areas to said light beam in an artistic manner and thereby provide an artistic expression on said sheet; and

b. developing said sheet.

4,455,370

TRANSFERRING SEPARATED COMPONENTS IN GEL ELECTROPHORESIS VIA NYLON MEMBRANE

Bart W. Bartelsman, Canton, Mass., and Dennis L. Fost, Ridgewood, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 378,899, May 17, 1982, abandoned.
This application Mar. 7, 1983, Ser. No. 472,984
Int. Cl.³ G01N 33/50, 33/68, 27/26
U.S. Cl. 435—6 **10 Claims**

1. In methods for transferring nucleic acids, proteins, bacteria or viruses from gel or culture media to a microporous adsorptive membrane, the improvement which comprises using as the membrane a microporous adsorptive nylon membrane.

4,455,371

OXALATE OXIDASE COMPOSITION FOR ASSAY OF OXALATE

Keith E. Richardson, Columbus, and David M. Obzansky, Westerville, both of Ohio, assignors to The Ohio State University Research Foundation, Columbus, Ohio

Filed Mar. 3, 1982, Ser. No. 354,303
Int. Cl.³ C12Q 1/26, 1/28; C12N 9/02
U.S. Cl. 435—25 23 Claims

1. An oxalate oxidase composition having an activity of at least about 5 international enzyme units/mg. of protein at 37° C. in said composition, said composition comprising an oxalate oxidase having an optimum pH of about 5.7, having an oxidase activity on citrate of only about 2% of its oxidase activity on oxalate, having substantially no oxidase activity on L-ascorbate, glyoxylate, glycolate, β-hydroxypyrovate, 2-ketoglutarate or succinate and not being inhibited by 1.0 mM sodium chloride solution.

4,455,372

METHOD FOR FERMENTATIVE PRODUCTION OF L-PROLINE

Ichiro Chibata, Suita; Masahiko Kisumi, Kobe; Masaki Sugiura, Kawanishi, and Tsutomu Takagi, Toyonaka, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Sep. 24, 1982, Ser. No. 422,730
Claims priority, application Japan, Oct. 6, 1981, 56-159829; Jun. 22, 1982, 57-107941
Int. Cl.³ C12P 13/24; C12N 1/20; C12R 1/43
U.S. Cl. 435—107 15 Claims

1. A method for the fermentative production of L-proline which comprises cultivating a L-proline-producing mutant of *Serratia marcescens* in a broth to produce and accumulate L-proline therein and collecting accumulated L-proline, said mutant being deficient in L-proline oxidase and resistant to proline analogs.

4,455,373

MICROBIOLOGICAL OXIDATIONS

Irving J. Higgins, Wingham, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Jul. 29, 1981, Ser. No. 288,205
Claims priority, application United Kingdom, Aug. 1, 1980, 8025241
Int. Cl.³ C12P 7/00; C12N 1/36, 1/20
U.S. Cl. 435—132 8 Claims

1. A process in which a hydrocarbon selected from the group consisting of alkanes, having 6 to 28 carbon atoms, alkenes having 2 to 18 carbon atoms, alicyclic hydrocarbons, benzene and alkyl benzenes is oxidized, comprising contacting the compound under aerobic conditions with cells of a methane-utilizing bacterium containing methane mono-oxygenase enzyme activity or with an extract thereof which comprises methane mono oxygenase enzyme activity wherein the bacterium has been adapted to utilize methanol as a carbon source for growth by cultivating said bacterium in a culture medium in the presence of methanol vapour as the principal carbon source for a period sufficient to allow adaptation to occur.

4,455,374

SOLAR FERMENTATION AND DISTILLATION PROCESS

David M. Schwartz, 2400 E. 13th Ave., Denver, Colo. 80206

Continuation-in-part of Ser. No. 149,903, May 15, 1980, abandoned, and Ser. No. 93,002, Nov. 9, 1979, Pat. No. 4,372,291. This application Jul. 14, 1982, Ser. No. 398,210
The portion of the term of this patent subsequent to Feb. 8, 2000, has been disclaimed.
Int. Cl.³ C12P 7/06; F24J 3/02
U.S. Cl. 435—161 3 Claims

1. A fermentation and distillation process for producing an ethanol product from an organic feed and yeast solution, the improvement comprising the steps of:

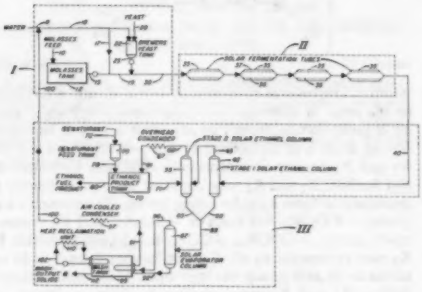
a. entraining said solution into a continuously moving stream through a closed, elongated channel;

b. directly applying solar energy to selected portions of said channel, whereby said solution is heated to fermentation temperature and the percentage of ethanol in said solution becomes greater as the mixture passes through said channel;

c. passing said solution from said channel to a distillation section comprising at least one distillation column; and

d. directly applying solar energy to said distillation column to supply from 50% to 100% of the reboil heat, said distillation column comprising a solar heat exchanger for vaporizing said solution as the feed liquid using solar energy as the heating source, said solar heat exchanger comprising:

a closed metal boiler tube wherein vaporization of the feed liquid entering the exchanger occurs, said metal tube coated with heat absorbent coating and having an inlet



opening for admitting the feed liquid into the metal boiler tube and an outlet opening for passing the vaporized product from the metal boiler tube,

a transparent glass tube enclosing the metal tube and forming an annular space between the glass tube and the metal boiler tube, said annular space evacuated to vacuum pressure, and

a spray tube of small diameter relative to the diameter of the metal boiler tube, said spray tube located within the metal boiler tube and having a plurality of spray orifices in close proximity to each other placed along the length of the spray tube, one end of said spray tube being in communication with said inlet opening of said metal boiler tube, said feed liquid entering said exchanger at a pressure sufficient to produce a continuous spray of said feed liquid through the spray orifices of said spray tube, said spray continuously impacting against the inside surface of said metal boiler tube to improve the rate of heat transfer to the feed liquid so that virtually all the liquid entering the metal boiler tube is converted to vapor within said metal boiler tube.

4,455,375

STABILIZED RENNET SOLUTION

Palle Schneider, Ballerup, and Sven Branner-Jorgensen, Charlottenlund, both of Denmark, assignors to Novo Industri A/S, Denmark

Filed Sep. 14, 1982, Ser. No. 417,856
Claims priority, application Denmark, Sep. 21, 1981, 4168/81
Int. Cl.³ C12N 9/96, 9/58
U.S. Cl. 435—188 7 Claims

1. A stabilized solution of microbial rennet wherein the stabilizing agent is methionine in an amount corresponding

between 0.1% (w/w) and saturation calculated on the total weight of the solution.

4,455,376

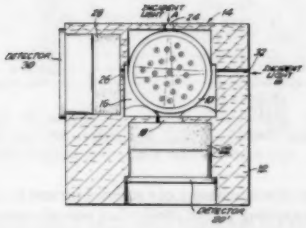
PHOTOMETRIC METHODS FOR COUNTING THE PARTICULATE COMPONENTS OF BLOOD

Robert Q. Maines, Tappan, N.Y., assignor to R. J. Harvey Instrument Corp., Hillsdale, N.J.

Division of Ser. No. 076,222, Sep. 17, 1979, Pat. No. 4,279,506, which is a continuation of Ser. No. 848,272, Nov. 3, 1977, abandoned. This application Apr. 7, 1981, Ser. No. 251,956

Int. Cl.³ G01N *33/52*

U.S. Cl. 436—63 8 Claims



1. A method for determining the white blood cell and platelet concentration in whole blood, comprising the steps of preparing a hypertonic solution, said solution being distilled water to which is added from about 1% to 9% by weight of Sodium Benzoate and from about 1% to 8% by weight of a polysaccharide selected from the group of dextran having an average molecular weight of about 200,000 to 300,000, wherein the total percentage of said sodium benzoate and polysaccharide will range from about 2% to 17% by weight, adding whole blood to said hypertonic solution to form a blood bearing solution, said whole blood additions to said hypertonic solution being from about one part of whole blood to 250 parts of said hypertonic solution to one part of whole blood to 2000 parts of said hypertonic solution, mixing thoroughly the blood bearing solution, allowing the solution to stand for a minimum of one minute to allow the cells to fully crenate, placing a measured portion of the blood bearing solution in a transparent envelope, surrounding said transparent envelope with Nylon IV dyed to render it absorbent of radiation across the entire visible and ultraviolet spectrum, exposing said solution to radiation that will cause the solution to produce a visible spectrum response which is quantitatively related to the white blood cell and platelet concentration and measuring said visible spectrum response, and wherein red blood cells are removed from the whole blood prior to measuring said visible spectrum response.

4,455,377

CLOTTING ASSAY AND REAGENT THEREFOR

Suja P. Finnerty, Arlington Heights, and Russell A. Hangos, Round Lake, both of Ill., assignors to Cooper Laboratories, Inc., Palo Alto, Calif.

Filed May 7, 1982, Ser. No. 375,936

Int. Cl.³ G01N *33/86*

U.S. Cl. 436—69 10 Claims

8. In a method for determining the ability of blood or a blood derivative to clot wherein Hageman factor is activated with a contact activator, the improvement comprising using as said contact activator colloidal silica or colloidal alumina-coated silica particles of about from 4 to 100 mμ mean diameter, said silica particles having been obtained by a process comprising (a) contacting an alkali silicate solution with an ion-exchange material for removing alkali metal ions from the silicate solution, and (b) recovering the colloidally dispersed particles from the ion exchange material.

4,455,378

METHOD OF DETERMINING THE CONTENT OF AN ANESTHETIC GAS IN A SELECTED LOCATION

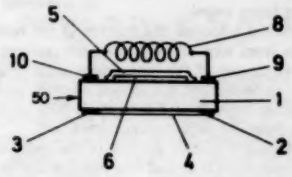
Gerhard Heiland, Aachen, and Heinz Laurs, Viersen, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 26, 1982, Ser. No. 372,048

Claims priority, application Fed. Rep. of Germany, May 13, 1981, 3118936

Int. Cl.³ G01N *27/12*

U.S. Cl. 436—126 7 Claims



1. A method of determining the content of an anesthetic gas containing at least one of the group consisting of halothane, enflurane and forane in a selected atmosphere, comprising heating a sensor layer which contains phthalocyanine and is in the selected atmosphere, dissociating the anesthetic gas by a heatable catalyst in a free space in front of the sensor layer, measuring the resistance of the sensor layer while it is heated, and selectively determining the content of the anesthetic gas by measuring at least one of the variation of electrical resistance and the rate of variation of electrical resistance.

4,455,379

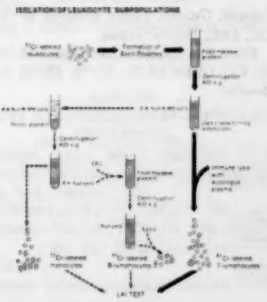
LEUKOCYTE ADHERENCE INHIBITION ASSAY

Julius G. Bekesi, Teaneck, N.J.; James F. Holland, Scarsdale, and Peter H. Tsang, New York, both of N.Y., assignors to Mount Sinai School of Medicine of the City University of New York, New York, N.Y.

Filed Jul. 21, 1981, Ser. No. 285,587

Int. Cl.³ G01N *33/58, 33/60*

U.S. Cl. 436—504 9 Claims



4. A method for assaying the extent of tumor burden in a patient comprising:

(1) taking a blood sample from a patient to be assayed and separating leukocytes therefrom;

(2) collecting T-cells fractionated from the leukocytes recovered in step (1), said T-cells having been incubated in

a medium containing a radioactive labeling compound which emits gamma rays, has a half life of at least about 5 days, and is effective to impart radioactivity to said T-cells without substantially impairing their viability, said incubating conditions being effective to impart an intracellular activity to said T-cells of at least 10^4 counts per minute per 10^5 T-cells;

(3)

(a) combining a first test portion of the radio-labeled T-cells from step (2) with allogenic antigen from an invasive cancer from the same histological origin from the cancer to be assayed in a first medium which will maintain the viability of said T-cells, said medium containing from about 7% to about 20% of allogenic human blood serum or plasma which is antigenically free and compatible with the red blood cells of the patient being tested;

(b) combining a second test portion of the radio-labeled T-cells from step (2) with allogenic antigen from an invasive cancer of the same histological origin as the cancer to be assayed in a second medium, said medium containing from about 7% to about 20% of autologous serum from the patient being tested; and

(c) combining a control portion of the radio-labeled T-cells from step (2) in said first medium and in the presence of said allogenic serum or plasma, but in the absence of allogenic antigen of said malignancy;

(4) incubating substantially the same quantities of T-cells of both said first and second portions and of said control portion in separate assay containers on which the T-cells of the control portion are capable of forming an adherent layer, the amount of said control portion in relation to the size of the assay container being not more than that which will form a monolayer of T-cells, said incubation being continued for a period of time sufficient for a major portion of the T-cells in the control portion to plate onto the assay container;

(5) removing non-adherent T-cells from the test and control assay containers from the conclusion of the incubation period; and

(6) comparing the radioactivity of the assay containers containing the two test portions with each other and with the radioactivity of the assay container in which the control portion was incubated.

4,455,380

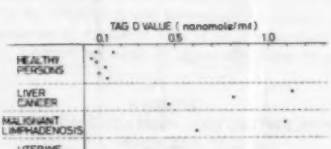
PROCESS FOR DETERMINING TUMOR-ASSOCIATED GLYCOLINKAGE

Masakazu Adachi, Gunma, Japan, assignor to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Jan. 29, 1982, Ser. No. 344,151

Int. Cl.³ G01N *33/56, 33/58, 33/60, 33/68*

U.S. Cl. 436—504 **32 Claims**



1. A process for determining the level of tumor-associated glycolinkage (TAG) in a sample of body fluid comprising reacting the TAG in a sample of body fluid with an N-acetyl-D-galactosamine (AG)-binding lectin or L-fucose-binding lectin to form a TAG-lectin complex and measuring the amount of the TAG-lectin complex or of unreacted lectin.

4,455,381

IMMUNOASSAY OF PROTEINS

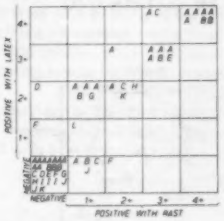
Carl-Gustaf M. Magnusson, Brussels; Daniel Collet-Cassart, Limal, and Pierre L. Masson, Brussels, all of Belgium, assignors to International Institute of Cellular and Molecular Pathology, Belgium

Filed Nov. 6, 1981, Ser. No. 319,023

Claims priority, application United Kingdom, Nov. 7, 1980, 8035794

Int. Cl.³ G01N *33/68*

U.S. Cl. 436—543 **19 Claims**



1. A method of immunoassay of a selected protein in a liquid sample also containing one or more other non-selected proteins, which comprises reducing or avoiding interference from said other proteins by mixing with the liquid sample a protein-digesting reagent, and allowing protein digestion to occur under conditions such that the said selected protein provides, in the resulting mixture, a fragment which is distinctive only of said selected protein in the said mixture; and thereafter assaying the said distinctive fragment by reaction with an antibody raised against said distinctive fragment and determining therefrom the amount of said selected protein present in said liquid sample.

4,455,382

ORGANIC-INORGANIC COMPOSITES OF NEUTRALIZED POLYELECTROLYTE COMPLEXES

Shy-Hsien Wu, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jan. 27, 1983, Ser. No. 461,672

Int. Cl.³ C03C *3/22;* C09C *1/02*

U.S. Cl. 501—2 **3 Claims**

1. Flocs of a neutralized polyelectrolyte complex exhibiting hydrophobic behavior containing relatively uniformly-sized crystals and consisting essentially of an organic polycation-exchanged lithium and/or sodium water-swelling mica selected from the group of fluorhectorite, hydroxyl hectorite, boron fluorphlogopite, hydroxyl boron phlogopite, and solid solutions among those and between those and other structurally-compatible species selected from the group of talc, fluortalc, polylithionite, fluorpolylithionite, phlogopite, and fluorphlogopite, at least a substantial portion of said crystals exhibiting a morphology of a continuum of flakes, rectangular-like strips, and interwoven ribbons in parallel or sub-parallel zones or sheaths, wherein said strips and ribbons are about 0.5–10 microns in length, about 500Å–5000Å in width, and less than 100Å in thickness, and said flakes are irregularly shaped with diameters between about 0.5–10 microns and cross sections of less than about 100Å, and said organic polycation being a water soluble condensate of a basic polyamide and epichlorhydrin which has assumed a polyamide-polyamine-epichlorhydrin resin form.

4,455,383

SINGLE-FRIT GLASS CERAMIC

Carlino Panzera, Belle Mead, N.J., assignor to Johnson & Johnson Dental Products Company, East Windsor, N.J.

Filed Apr. 4, 1983, Ser. No. 482,076
Int. Cl.³ C03C 3/22
U.S. Cl. 501—6 3 Claims

1. A single-frit porcelain powder, suitable for use as a porcelain layer on metal-base dental restorations, and having a fired coefficient of thermal expansion within the range of from about 12 to about 14×10^{-6} in/in °C., wherein said single frit porcelain is of the following composition:

Component	Weight Percent
SiO_2	$65\frac{1}{2} \pm 4$
Al_2O_3	15 ± 2
K_2O	$12\frac{1}{2} - 1, + 2$
Flux	4 ± 1
MO	2 ± 1

wherein M represents calcium, magnesium, or a mixture thereof, and Flux represents sodium oxide or lithium oxide or a mixture thereof, optionally with boron oxide.

4,455,384

CHEMICALLY DURABLE NITROGEN CONTAINING PHOSPHATE GLASSES USEFUL FOR SEALING TO METALS

Delbert E. Day, Rolla, Mo., and James A. Wilder, Jr., Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 8, 1982, Ser. No. 447,847
Int. Cl.³ C03C 3/16
U.S. Cl. 501—15 11 Claims

1. An alkali phosphate glass comprising 10–60 mole percent Li_2O, Na_2O or K_2O, 5–40 mole percent BaO or CaO, 0.1–10 mole percent Al_2O_3, and 40–70 mole percent P_2O_5, and being of enhanced chemical durability due to said glass further comprising about 0.15 to 23 wt percent of nitrogen added in the form of a metal nitride.

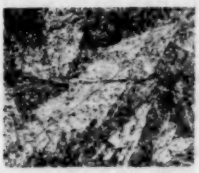
11. In a glass to metal seal, the improvement wherein the glass is a phosphate glass of claim 1.

4,455,385

SILICON CARBIDE SINTERED BODY

Svante Prochazka, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 707,117, Jul. 21, 1976, abandoned, which is a continuation of Ser. No. 591,840, Jun. 30, 1975, abandoned. This application Nov. 5, 1980, Ser. No. 204,293
Int. Cl.³ C04B 35/56
U.S. Cl. 501—90 18 Claims



1. An as-sintered polycrystalline silicon carbide body of complex and/or hollow shape densified without external mechanical compression from a preform of particulate material, said body being characterized as densified without external mechanical compression by its as-sintered non-machined surface, said as-sintered body having a density of at least 80% of the theoretical density for silicon carbide consisting essentially of (a) at least 70% by weight of α-silicon carbide and not more than 30% by weight of β-silicon carbide; (b) 0.3% to about 3% by weight boron, and (c) about 0.1% to 1% by weight of free carbon, said α-silicon carbide having a substantially uniform microstructure in the form of elongated grains or platelets ranging in size in the long dimension from about 5 microns to about 150 microns and said β-silicon carbide having a significantly uniform microstructure in the form of fine grains ranging in size from about 1 micron to about 10 microns.

4,455,386

POLYMERIZATION CATALYST

Michael W. Lynch, Schaumburg, and Thomas J. Pullukat, Hoffman Estates, both of Ill., assignors to Chemplex Company, Rolling Meadows, Ill.

Filed Mar. 29, 1982, Ser. No. 363,105
Int. Cl.³ C08F 4/02, 4/64
U.S. Cl. 502—104 32 Claims

17. The method of making a solid catalyst for use with an alkyl or aryl aluminum cocatalyst in the polymerization and interpolymerization of 1-olefins comprising:

(1) reacting a metal oxide support containing silica or alumina having surface hydroxyl groups, or both, with a functional phosphorus compound which is reactive towards said surface hydroxyl groups;

(2)reacting the product of (1) with a Group IIA organometallic compound or complex or mixture; and

(3) reacting the product of (2) with a Group IVB, VB or VIB metal halide or alkoxide or a mixture of these, or reacting (1) with (3) and then with (2).

4,455,387

MIXED DIALKYLMAGNESIUM

Bonnie G. McKinnie, and Gene C. Robinson, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Sep. 27, 1982, Ser. No. 423,957
Int. Cl.³ B01J 31/12; C08F 4/50
U.S. Cl. 502—153 31 Claims

1. A process for the manufacture of a hydrocarbon solution of a mixed dialkylmagnesium comprising:

(a) reacting, in the presence of a hydrocarbon solvent, magnesium metal with ethylene and an alkyl halide, to form a mixture of a hydrocarbon solution of a mixed dialkylmagnesium composition and undissolved solids;

(b) separating the hydrocarbon solution from the undissolved solids; and,

(c) recovering a mixed dialkylmagnesium product.

4,455,388

CATALYST AND PROCESS FOR PRODUCING DIOLEFINS

Paul R. Robinson, Costa Mesa, and Eric L. Moorehead, Diamond Bar, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 328,446, Dec. 7, 1981. This application Dec. 29, 1981, Ser. No. 335,531
Int. Cl.³ B01J 27/14
U.S. Cl. 502—209 41 Claims

1. An oxidative dehydrogenation catalyst defined by the formula:

$$Me_aV_bP_cSn_dO_eX$$

wherein X is crystalline silica, Me is an alkali metal, a is 0.10 to 2, b is 0.10 to 1, c is 1, d is 0.001 to 0.30 and e is a number which satisfies the valence requirements of the other elements present.

4,455,389
MAGNESIUM HYDRIDE MODIFIED ALUMINUM/SILICEOUS COMPOSITIONS

Robert M. Lewis, Sugarland, and Lynn H. Slaugh, Cypress, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 21, 1983, Ser. No. 477,185
Int. Cl.³ B01J *21/08, 29/00, 21/10, 23/08*
U.S. Cl. 502—232 **8 Claims**

1. A process for preparing a metal oxide gel composition having bonded thereto a magnesium oxide, which process comprises contacting a substantially anhydrous metal oxide gel with a powdered magnesium hydride in a slurry phase with slurrying medium being an anhydrous, non-hydroxyl-containing organic liquid whereby the magnesium hydride reacts with the metal oxide gel, and subsequently drying the gel to remove the organic liquid.

4,455,390
CATALYST AND METHOD FOR IMPREGNATING AT A PH LESS THAN ONE

Pauline B. Ting, Brea, and Howard D. Simpson, Irvine, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Aug. 19, 1982, Ser. No. 409,583
Int. Cl.³ B01J *21/04, 23/85*
U.S. Cl. 502—314 **44 Claims**

1. A catalytic composition prepared by the method comprising the steps of (1) impregnating support particles with an aqueous impregnating solution comprising one or more dissolved Group VIB metal components and citric acid, and wherein said solution has a pH less than 1.0, and (2) calcining the impregnated support particles.

29. A long-term stable impregnant solution for preparing a hydrogen conversion catalyst comprising an aqueous solution comprising one or more dissolved Group VIB metal components and citric acid, said citric acid, calculated as the monohydrate, in a mole ratio to said dissolved Group VIB metal, calculated as the trioxide, of greater than about 1 to 1, and wherein said solution has a pH less than about 1.0.

4,455,391
PASSIVATED CRG CATALYSTS

Ivor J. Kitchener, London, England, assignor to British Gas Corporation, Great Britain

Filed Mar. 9, 1983, Ser. No. 473,554
Claims priority, application United Kingdom, Mar. 12, 1982, 8207244
Int. Cl.³ B01J *23/84*
U.S. Cl. 502—315 **5 Claims**

1. In a process for preparing a catalyst wherein a precursor is formed by coprecipitating the catalyst components from an aqueous solution comprising salts of nickel and of aluminium, followed by filtering, washing, drying and calcining the coprecipitate, and thereafter reducing the coprecipitate precursor to form an active catalyst, the steps of

carrying out said calcination at a temperature in the range of from greater than 480° C. to 550° C.;

carrying out said reducing of the precursor at a temperature of at least 450° C. until at least two-thirds of the reducible material present in the precursor is reduced;

conditioning the thusly reduced catalyst in a carbon dioxide atmosphere at a temperature in the range of from 175° C. to 200° C. for a period of at least one-half hour; and

thereafter allowing the conditioned catalyst to cool to ambient temperature in said carbon dioxide atmosphere.

4,455,392
PROCESS FOR PREPARING A SUPPORTED SILVER CATALYST

Glenn H. Warner, St. Albans; Madan M. Bhasin, Charleston, both of W. Va., and Bernard Lieberman, Kew Gardens, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Oct. 5, 1981, Ser. No. 308,653
Int. Cl.³ B01J *23/04, 23/50*
U.S. Cl. 502—347 **9 Claims**

1. In the process for preparing a supported silver catalyst for the production of ethylene oxide by the vapor phase oxidation of ethylene with an oxygen-containing gas comprising:

(a) impregnating a porous catalyst support with a solution comprising a solvent or a solublizing agent, and silver salt in an amount sufficient to deposit the desired amount of silver on said support;

(b) treating the impregnated support to convert at least a fraction of the silver salt to silver metal and effect deposition of silver on the surface of said support;

(c) impregnating the support treated in step (b) with a solution containing a solvent and a compound of at least one metal cation promoter in an amount sufficient to deposit the desired amount of promoter on said support; and

(d) treating the impregnated support produced in step (c) to effect disposition of said promoter on the surface of said support,

the improvement comprising using in step (c) a solution comprising at least 50 wt. % of an organic solvent capable of forming a complex with silver ion and selected from the group consisting of alkyl amines, alkylene diamines, amino alcohols, amino ethers and amides and at least one compound of an alkali metal promoter.

4,455,393
CATALYST FOR REDUCING THE IGNITION TEMPERATURE OF DIESEL SOOT AND PROCESS FOR MAKING THE CATALYST

Rainer Domesle, Maintal, and Herbert Völker, Hanau, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 18, 1982, Ser. No. 434,806
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1981, 3141713
Int. Cl.³ B01J *23/22, 23/50*
U.S. Cl. 502—347 **7 Claims**

1. A catalyst which is a diesel soot particulate filter and is shaped for fitting into the exhaust system of an automobile equipped with a diesel engine which catalyst is for reducing the ignition temperature of diesel soot filtered out of the exhaust gas of diesel engines, comprising silver vanadate as the catalytically active ingredient of an inert monolithic honeycomb or temperature resistant metal support.

4,455,394
METHANOL PRODUCTION

Alwyn Pinto, Linthorpe, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 263,732, May 14, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 430,674
Claims priority, application United Kingdom, May 20, 1980, 8016619
Int. Cl.³ C07C *27/06, 31/04*
U.S. Cl. 518—704 **8 Claims**

1. A methanol production process comprising the steps

(a) generating methanol synthesis gas by catalytic reaction with steam of a gaseous or vaporized hydrocarbon;

(b) reacting the synthesis gas over a methanol synthesis catalyst and recovering a crude methanol liquid product from the reacted gas;

(c) adding alkali to the crude liquid product, distilling the resulting admixture and separating therefrom a purified methanol stream and a liquid fusel oil stream containing

said alkali and organic compounds of higher boiling point than methanol; and

(d) feeding said fusel oil stream in the liquid state to a zone where it is contacted by said gaseous or vaporized hydrocarbon under conditions effecting incomplete evaporation of the fusel oil stream; separating organic compounds from the fusel oil with said hydrocarbon, leaving a liquid waste solution containing said alkali; feeding said mixture of organic compounds and said hydrocarbon to step (a) and separating said liquid waste solution.

4,455,395

PROCESS FOR THE PRODUCTION OF UNSATURATED HYDRO-CARBONS

Bernd Büssemeier, Mülheim; Carl D. Frohning; Gerhardt Horn, both of Oberhausen, and Werner Kluy, Bochum-Stiepel, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 308,609, Oct. 5, 1981, abandoned, which is a continuation of Ser. No. 6,870, Jan. 26, 1979, abandoned, which is a continuation of Ser. No. 821,206, Aug. 2, 1977, abandoned, which is a continuation of Ser. No. 679,141, Apr. 22, 1976, abandoned. This application Aug. 20, 1982, Ser. No. 409,888

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1975, 2518964

Int. Cl.³ C07C *1/04*

U.S. Cl. 518—717 **7 Claims**

1. In a process for the production of hydrocarbon mixtures containing predominantly olefins comprising catalytic conversion of a feed gas comprising carbon oxides and hydrogen in the presence of a catalyst containing iron and those oxides of vanadium and/or manganese which are difficult to reduce at elevated temperatures and pressures, the improvement which comprises carrying out said conversion at a temperature of 250° C. to 350° C. and under a pressure of 10 to 30 bars, in the presence of a catalyst consisting essentially of 100 parts by weight of iron, and 50 to 100 parts by weight of an oxide of manganese and/or vanadium, said oxide being difficult to reduce, said catalyst including 3 to 5 parts by weight of K_2O, and 5 to 15 parts by weight of ZnO.

4,455,396

FLAME PROTECTION COMPOSITION COMPRISING ALUMINUM TRIHYDRATE ORGANIC BINDER, AND A SULFUR COMPOUND AND A POLYURETHANE FOAM PROVIDED WITH SUCH FLAME-PROTECTION COMPOSITION

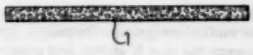
Manhal Al-Tabaqchall, Kurt-Lindemannstr. 25, D-6903 Neckargemünd; Ludwig Wesch, Görresstrasse 54, D-6900 Heidelberg, and Edgar Weiss, Am Stangenberg 37, D-6901 Neckarsteinach, all of Fed. Rep. of Germany

Filed Dec. 14, 1981, Ser. No. 330,695

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1980, 3047823

Int. Cl.³ C08L *33/08*

U.S. Cl. 521—54 **19 Claims**



1. Flame protection compositions for the treatment of inflammable articles, comprising up to about 50% by weight of the total composition of aluminum trihydrate bound in an organic binder and a sulfur compound having at least one sulfo group and/or sulfonium ions in a proportion of between 7.5 and 30% by weight based upon the weight of the total composition.

4,455,397

POLYISOCYANURATE FOAMS PREPARED FROM PARTIALLY ETHERIFIED METHYLOLAMINES

Curtis J. Reichel, Wyandotte; Thirumurti Narayan, Grosse Ile, and John T. Patton, Jr., Wyandotte, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Sep. 14, 1983, Ser. No. 531,867

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—166 **5 Claims**

1. A polyisocyanurate foam prepared by reacting (a) a polyol, (b) an organic polyisocyanate, (c) blowing agent, in the presence of a trimerization catalyst, wherein the polyol is selected from the group consisting of a partially etherified methylolmelamine and a mixture of a polyoxyalkylene polyether polyol and said methylolmelamine.

4,455,398

GLASS FIBER REINFORCED POLYVINYL COMPOSITION

Wolfgang Budich, Troisdorf-Eschmar; Bertram Gasper, Troisdorf-Spich; Josef Kurth, Troisdorf-Spich; Karl-Günter Scharf, Troisdorf-Spich, and Waldemar Wissinger, Siegburg, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jan. 28, 1983, Ser. No. 461,742

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1982, 3202919

Int. Cl.³ C08K *3/40, 7/14*

U.S. Cl. 523—220 **5 Claims**

1. An extrudable glass fiber-reinforced polyvinyl chloride composition made up of polyvinyl chloride resin having a K value between 55 and 75, glass fibers, and inorganic fillers different from the glass fibers, and conventional additives, including mold release agents, stabilizers, processing aids, and colorants for the production of extruded articles, said composition containing, per 100 parts by weight of a polyvinyl chloride resin, 50–100 parts by weight of glass fibers having a diameter of between 5 and 25 μm with a length up to 12 mm, and 5–25 parts by weight of a mineral filler having an average particle diameter of below 50 μm and exhibiting a modulus of elasticity in the extrusion direction of an extruded product of at least 8,000N/mm² at 23° C.

4,455,399

HETEROGENEOUS RUBBER COMPOSITIONS MADE FROM CHEMICALLY SIMILAR BLENDS

Biing-Lin Lee, Broadview Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jan. 24, 1983, Ser. No. 460,690

Int. Cl.³ C08K *3/04*

U.S. Cl. 523—351 **20 Claims**

1. A process for making a rubber having improved green strength, comprising the steps of:

(a) forming a heterogeneous rubber composition comprising by weight approximately 100 total parts of rubber containing at least 30 parts by weight of natural rubber, and from about 30 to about 70 total parts of carbon black, said rubber composition formed by;

(b) separately forming a major fraction comprising natural rubber and at least one other rubber compound made from monomers selected from the group consisting of (1) conjugated dienes having from 4 to 12 carbon atoms, (2) copolymers made from conjugated dienes having from 4 to 12 carbon atoms and vinyl substituted aromatics having from 8 to 12 carbon atoms, and (3) combinations thereof, said major fraction containing from about 60 to about 90 parts by weight of said rubbers, and an amount of said carbon black of from about 20 to about 80 parts by weight;

(c) separately forming a minor fraction comprising at least natural rubber and a carbon black, said minor fraction having from about 10 to about 35 parts by weight of said

rubber, and from about 1 to about 20 parts by weight of said carbon black;

(d) separately mixing and heating at least one of said fractions; and

(e) mixing together under heat said major fraction and said minor fraction to produce said heterogeneous rubber composition.

4,455,400

MIGRATIN-FREE SIZE FOR GLASS FIBERS

Carl A. Johnson, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 946,904, Sep. 28, 1978, abandoned. This application Jun. 25, 1980, Ser. No. 162,854

Int. Cl.[3] **C08L** *67/00, 63/00*

U.S. Cl. 523—454 **4 Claims**

1. A size for treating glass fibers comprising:

from about 5 to about 30 percent by weight of a silane coupler;

from about 10 to about 65 percent by weight of a lubricant;

from about 10 to about 70 percent by weight of an epoxy film former; and

an amount, up to about 8 percent by weight, of a volatile blocking agent sufficient for blocking the reaction of said coupler and said film former;

said size having a viscosity not greater than 2000 cps and carrier being substantially absent therefrom.

4,455,401

2-KETO-DIAZACYCLOALKANE-URETHANE OLIGOMERS AND U-V LIGHT STABILIZED COMPOSITIONS

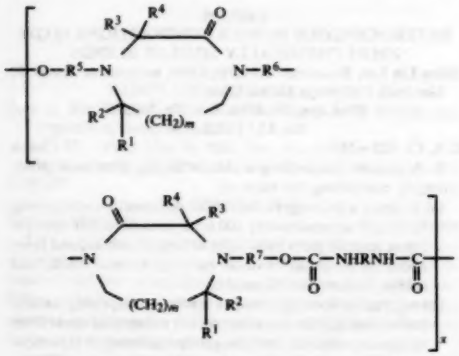
Pyong N. Son, Akron, and John T. Lai, Broadview Heights, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed May 6, 1982, Ser. No. 375,242

Int. Cl.[3] **C08K** *5/34;* **C07D** *243/08, 241/08*

U.S. Cl. 524—91 **9 Claims**

1. A class of compounds comprising an oligomer of a 2-keto-1,4-diazacycloalkane and a urethane said oligomer ("2K-U oligomer") having the structure



wherein,

m represents an integer in the range from 0 to 5, being the number of methylene groups forming a bridge of variable length between the ring N atoms, and some of which groups (a) together with the carbons to which they are bound, may form a cyclopentyl, cyclohexyl or cycloheptyl endo ring, or (b) be substituted; so that, when m is 0, the 2KDZC moiety is a piperazinone ring; when m is 1 the 2KDZC moiety is a 5-keto-1,4-diazacycloheptane ring; when m is 4 and cyclized with the other two contiguous C atoms to form an endo ring, the 2KDZC moiety is decahydroquinoxalinone;

x represents an integer in the range from 2 to about 15;

R is selected from the group consisting of alkylene having from 2 to about 12 carbon atoms, toluyl, diphenylmethyl, naphthyl, dimethyl-biphenyl, dimethoxy-biphenyl, methylcyclohexyl, dicyclohexylmethyl, xylyl, isophoronyl, and trimethylhexyl;

R^1, R^2, R^3 and R^4 are independently selected from the group consisting of hydrogen, aryl, alkyl having from 1 to about 24 carbon atoms, cycloalkyl having from 5 to about 7 carbon atoms, aralkyl having from 7 to about 20 carbon atoms, cycloalkyl having from 2 to about 12 carbon atoms, ether having from 4 to about 18 carbon atoms, and hydroxyalkyl having from 1 to about 18 carbon atoms;

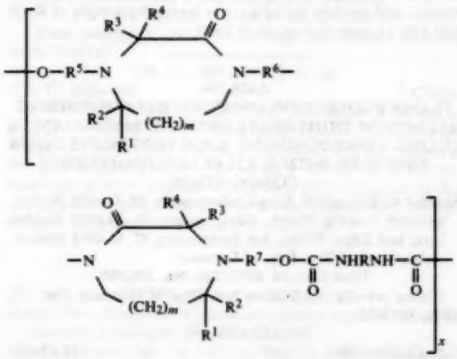
R^1 and R^2 together, or R^3 and R^4 together, or each pair, may be cyclized forming a ring having from about 5 to about 8 carbon atoms;

except that not more than one of R^1, R^2, R^3 or R^4 may be hydrogen, and no more than three of R^1, R^2, R^3 and R^4 may be cyclic;

R^5 and R^7 are each polymethylene having from 2 to about 12 carbon atoms each of which polymethylene constitutes a connecting link distally connecting a 2-keto-diazacycloalkane moiety to a urethane group; and,

R^6 is selected from the group consisting of polymethylene having from 2 to about 12 carbon atoms, xylenyl substituted or unsubstituted phenyl, which group is a connecting link distally connecting one 2-keto-1,4-diazacycloalkane moiety to another such moiety.

7. A composition of matter resistant to degradation by ultraviolet light comprising an organic material subject to ultraviolet light degradation having dispersed therein from about 0.01 part to about 5 parts by weight of a stabilizer compound consisting essentially of a bis compound of a polysubstituted 2-keto-1,4-diazacycloalkane distally linked through the N^4 atoms thereof to a urethane moiety, per 100 parts of said organic material, said stabilizer compound being represented by the structural formula



wherein,

m represents an integer in the range from 0 to 5, being the number of methylene groups forming a bridge of variable length between the ring N atoms, and some of which groups (a) together with the carbons to which they are bound, may form a cyclopentyl, cyclohexyl or cycloheptyl endo ring, or (b) be substituted; so that, when m is 0, the 2KDZC moiety is a piperazinone ring; when m is 1 the 2KDZC moiety is a 5-keto-1,4-diazacycloheptane ring; when m is 4 and cyclized with the other two contiguous C atoms to form an endo ring, the 2KDZC moiety is decahydroquinoxalinone;

x represents an integer in the range from 2 to about 15;

R is selected from the group consisting of alkylene having from

2 to about 12 carbon atoms, toluyl, diphenylmethyl, naphthyl, dimethyl-biphenyl, dimethoxy-biphenyl, methylcyclohexyl, dicyclohexylmethyl, xylyl, isophoronyl, and trimethylhexyl;

R^1, R^2, R^3 and R^4 are independently selected from the group consisting of hydrogen, aryl, alkyl having from 1 to about 24 carbon atoms, cycloalkyl having from 5 to about 7 carbon atoms, aralkyl having from 7 to about 20 carbon atoms, cyanoalkyl having from 2 to about 12 carbon atoms, ether having from 4 to about 18 carbon atoms, and hydroxyalkyl having from 1 to about 18 carbon atoms;

R^1 and R^2 together, or R^3 and R^4 together, or each pair, may be cyclized forming a ring having from about 5 to about 8 carbon atoms;

except that not more than one of R^1, R^2, R^3 or R^4 may be hydrogen, and no more than three of R^1, R^2, R^3 and R^4 may be cyclic;

R^5 and R^7 are each polymethylene having from 2 to about 12 carbon atoms each of which polymethylene constitutes a connecting link distally connecting a 2-keto-diazacycloalkane moiety to a urethane group; and,

R^6 is selected from the group consisting polymethylene having from 2 to about 12 carbon atoms, xylenyl and substituted or unsubstituted phenyl, which group is a connecting link distally connecting one 2-keto-1,4-diazacycloalkane moiety to another such moiety.

4,455,402

(METH)ACRYLATE FILM-FORMING POLYMERS PREPARED WITH AN IN PROCESS COALESCENT

David R. Amick, Chalfont; Sidney Melamed, Elkins Park, and Ronald W. Novak, Chalfont, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jan. 5, 1983, Ser. No. 455,763

Int. Cl.³ C08K *5/05, 5/10;* **C08F** *265/06*

U.S. Cl. 524—295 **21 Claims**

1. A process for producing sequentially fed two stage film forming polymers comprising emulsion polymerizing a first, soft polymer, and then emulsion polymerizing in the presence of the soft polymer and a coalescent a second, hard, polymer, the weight ratio of first, soft polymer to second, hard polymer being about 35:65 to 65:35, wherein said hard polymer, if polymerized separately, would have a T_g of at least 25° C. and said soft polymer, if polymerized separately, would have a T_g below 15° C. and wherein said soft polymer is polymerized from a monomer system containing at least one acrylate, and said hard polymer is polymerized from a monomer system containing at least one methacrylate.

4,455,403

SILICONE RESIN COATING AGENT

Ralf Liebler, Darmstadt, Fed. Rep. of Germany, assignor to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Aug. 24, 1982, Ser. No. 411,023

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1981, 3134777

Int. Cl.³ C08K *5/09*

U.S. Cl. 524—300 **15 Claims**

1. An aqueous coating formulation having improved storage stability of at least 16 days at 30° C., consisting essentially of water, an alkanoic acid having from 8 carbon atoms, and a silicone resin condensation product prepared by condensing an organosilicon compound partially hydrolyzed in the presence of an inorganic acid, an organic acid, or on acidic ion exchanger.

4,455,404

RIGID, NON-ELASTOMERIC, NON-CELLULAR, AMORPHOUS METAL REINFORCED POLYETHER-URETHANE COMPOSITIONS

Edward R. Degginger, Convent Station, N.J., assignor to Allied Corporation, Morristown, N.J.

Filed May 16, 1983, Ser. No. 495,195

Int. Cl.³ C08K *3/08*

U.S. Cl. 524—439 **12 Claims**

1. A rigid, non-elastomeric, non-cellular, reinforced urethane composition, characterized by high flexural strength properties, comprising (I) a polyether urethane prepared by admixing (a) a blend of polyethers having an average functionality of from about 4.0 to about 7.5 and an average hydroxyl number of from about 300 to 600, said polyether blend being a member selected from the group consisting of (1) polyethers obtained by reacting at least one alkaline oxide selected from the group consisting of ethylene oxide and propylene oxide with a mixture of polyhydric alcohols selected from the group consisting of polyhydric alcohols containing from 2 to about 8 hydroxyl groups and (2) a mixture of at least two different preformed polyethers obtained by reacting at least one of said alkaline oxides with a polyhydric alcohol selected from the group consisting of polyhydric alcohols containing from 2 to about 8 hydroxyl groups with (b) an organic polyisocyanate wherein the NCO:OH ratio is about 0.8:1 to about 1.3:1 and (II) an amorphous metal reinforcing material, wherein said polyether-urethane composition is cured in intimate contact with said amorphous metal reinforcing material.

4,455,405

PREPARATION OF PROPYLENE/ETHYLENE BLOCK COPOLYMERS

James F. R. Jaggard, Gruenstadt; Guenther Schweier, Friedelsheim, and Peter Klaerner, Battenberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 1, 1982, Ser. No. 438,278

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1981, 3144312

Int. Cl.³ C08F *297/08*

U.S. Cl. 525—53 **12 Claims**

1. A process for the preparation of a propylene/ethylene block copolymer, in which, in each case in an agitated bed consisting of small polymer particles and in the absence of a liquid reaction medium, first

(I) propylene, at from 23 to 34 bar is homopolymerized, from the gas phase, in a first polymerization zone at from 65° to 87° C. by feeding in a Ziegler-Natta catalyst comprising

(1) a titanium(III) component and

(2) a dialkyl-aluminum chloride component where each alkyl is of 2 to 4 carbon atoms, and

(3) a further catalyst component, and then

(II) the product obtained in the first polymerization zone is fed into a second polymerization zone at from 40° to 60° C., where a mixture of propylene and ethylene, at a propylene pressure of from 10 to 16 bar and an ethylene pressure such that it gives from 5 to 20 percent by weight of copolymerized ethylene units in the total polymer, is polymerized with the propylene homopolymer present in the product from the first polymerization zone, with the provisos that (i) the atomic ratio of titanium from the titanium(III) component (1):aluminum from the dialkyl-aluminum chloride component (2) is from 1:2 to 1:15, (ii) the total pressure in the first polymerization zone is 8–25 bar higher than that in the second polymerization zone, and (iii) from 75 to 95 percent by weight of the total polymer is produced in the first polymerization zone, and the remainder thereof in the second polymerization zone, wherein the Ziegler-Natta catalyst employed contains a titanium(III) component (1) which is prepared by subjecting

(1.1) a titanium-containing compound (a) of the formula

$TiCl_3.nAlCl_3$

where n is from 0.1 to 0.4 and

(1.2) an electron donor (b), consisting of an ester which contains a total of 2 to 18 carbon atoms and is of the formula

$R^1—O—CO—R^2$

where R^1 is alkyl of 1 to 8 carbon atoms, and R^2 is phenyl-alkyl of, in total, 7 to 14 carbon atoms,

to a milling procedure in which

(A) a vibratory ball mill with an acceleration of from 45 to 55 $m.sec^{-2}$ is employed,

(B) the mill is first charged with the titanium-containing compound (a) and is operated at from −30° to +50° C. for from 2 to 20 hours in the absence of a diluent,

(C) an amount of electron donor (b) which corresponds to a molar ratio of titanium in the titanium-containing compound (a): electron donor (b) of from 1:0.1 to 1:0.7 is then added at a rate of from 1 to 80 ml/min per 2.5 kg of titanium-containing compound (a) continuously in the absence of a diluent, and while milling the mill base at from −30° to +60° C.,

(D) the mill base is thereafter kept at from +20 to +90° C. for from 5 to 70 hours, while milling is continued,

(E) the product obtained in (D) is then milled further for from 2 to 30 minutes at from −40° to 0° C. in the absence of a diluent,

(F) the product obtained in (E) is then kept at from +45° to +100° C. for from 2 to 150 hours, without subjecting it to milling, thereafter

(H) a suspension is prepared from

(H_1) 1 part by weight of the product obtained in (F),

(H_2) from 0.7 to 2 parts by weight of a hydrocarbon (c) which is liquid under standard conditions of temperature and pressure and boils below 100° C., and

(H_3) an oxygen-containing compound (d), consisting of an ether which contains a total of 4 to 30 carbon atoms and is of the formula

$R^5—O—R^6$

where R^5 and R^6 are identical or different and are each (I) alkyl of 1 to 15 carbon atoms, (II) phenyl or (III) alkyl-phenyl of, in total, 7 to 14 carbon atoms, and/or an ester which contains a total of 2 to 14 carbon atoms and is of the formula

$R^7—O—CO—R^8$

where R^7 is alkyl of 1 to 4 carbon atoms, and R^8 is alkyl of 1 to 9 carbon atoms, in an amount such that the molar ratio of titanium from the titanium-containing compound (a):oxygen-containing compound (d) is from 1:0.08 to 1:0.5

(I) the suspension obtained in (H), under vigorous agitation, is then kept at from +50° to +95° C. for from 15 to 60 minutes, and thereafter brought to from +15° to +25° C., and (J) the solid is then isolated from the suspension obtained in (I), washed with a hydrocarbon which is liquid under standard conditions of temperature and pressure and boils below 100° C., and dried; in this manner, the titanium(III) component (1) to be employed for the polymerization is obtained as the solid isolated in (J).

4,455,406

HIGH- AND MEDIUM-DENSITY EXTRUDABLE AND CROSSLINKABLE POLYETHYLENE COMPOSITIONS

Anne-Marie Bergault, Colombes, France; Gérard Bonavent, deceased, late of Rueil Malmaison, France (by Marie-Joseph Bonavent, legal representative); Jacques Jarrin, Boulogne, and Marc Mollard, both of Colombes, France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Feb. 18, 1983, Ser. No. 467,678

Claims priority, application France, Feb. 18, 1982, 8202835

Int. Cl.³ C08L *23/26, 33/08*

U.S. Cl. 525—194 **12 Claims**

1. An extrudable and crosslinkable composition, which comprises:

(a) a major proportion of a polyolefin which is a high- or medium-density polyethylene or a copolymer of ethylene units and less than 5% of C_3 to C_8 olefin units,

(b) a minor proportion of at least one free radical generator compound, and

(c) a proportion from 0.5 to 10% by weight of at least one C_{14} to C_{24} n-alkyl acrylate polymer, having an average molecular weight by number of from 500 to 50,000.

4,455,407

VINYL CHLORIDE COPOLYMER AND COMPOSITION CONTAINING THE SAME

Kazumasa Yamane, Kobe; Masahiro Kobayashi, Amagasaki, and Masahiko Takada, Akashi, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

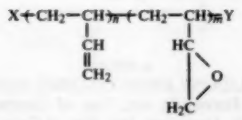
Division of Ser. No. 302,470, Sep. 15, 1981, Pat. No. 4,391,944, which is a division of Ser. No. 210,858, Nov. 26, 1980, Pat. No. 4,363,903. This application Mar. 8, 1983, Ser. No. 473,272

Claims priority, application Japan, Nov. 30, 1979, 54-155874; Dec. 4, 1979, 54-157296

Int. Cl.³ C08L *37/00*

U.S. Cl. 525—208 **1 Claim**

1. A composition comprising (A) 5% to 80% by weight of a copolymer prepared by polymerizing a reaction system comprising a monomeric mixture of (a) vinyl chloride or a mixture of at least 50% by weight vinyl chloride and a monomer copolymerizable therewith and (b) 0.001 to 10 parts by weight per 100 parts by weight of the monomeric component (a) of a compound having the following general formula:



wherein X and Y are independently hydrogen, hydroxyl or carboxyl, n is an integer of 2 to 100 and m is 0 or an integer of 1 to 80.

the polymerization being carried out employing a free-radical polymerization initiator; and (B) 95% to 20% by weight of a polymer selected from the group consisting of vinyl chloride homopolymer, vinyl chloride-vinyl acetate copolymer, vinyl chloride-acrylate copolymer, vinyl chloride-methacrylate copolymer, vinyl chloride-ethylene copolymer, vinyl chloride-alkyl vinyl ether copolymer and vinyl chloridepropylene copolymer.

4,455,408

PROCESS FOR REACTING QUATERNARY AMMONIUM MONOMERS IN THE PRESENCE OF ANIONIC POLYMERS

Chester D. Szymanski, Martinsville, and Dennis Neigel, Whitehouse Station, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

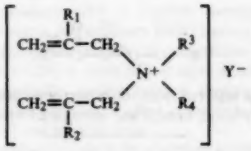
Filed Aug. 11, 1982, Ser. No. 407,014
Int. Cl.[3] C08L 33/08, 33/10, 25/18
U.S. Cl. 525—291 13 Claims

1. A process for reacting quaternary ammonium monomers in the presence of anionic polymers to directly form a dry coacervate comprising the steps of:

(a) forming a solution of the monomer(s), anionic polymer, solvent and free-radical initiator;

(b) simultaneously polymerizing the monomers and drying the solution at a temperature above the boiling point of the solvent; and

(c) recovering the resultant dry product; wherein the quaternary ammonium monomers are represented by the following formula:



where R_1 and R_2 each represent a member selected from the group consisting of hydrogen and metyl and ethyl radicals; R_3 and R_4 each represent a member selected from the group consisting of alkyl, aryl, cycloalkyl, hydroxyalkyl and alkoxyalkyl radicals having from 1 to 18 carbon atoms, and Y^- represents an anion and the anionic polymer is selected from the group consisting of homo- and co-polymers of styrene sulfonates, alkali metal styrene sulfonates, acrylates, mathacrylates, and alkali metal and ammonium salts of copolymers of styrene and substituted styrenes with maleic acid and wherein the anionic polymer is present in an amount of 0.1 to 3 parts by weight per part of the monomers components.

4,455,409

METHOD FOR MAKING BISPHENOL CATALYSTS

Gary R. Faler, Scotia, and John R. Campbell, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

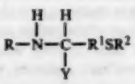
Filed Dec. 2, 1982, Ser. No. 446,135
Int. Cl.[3] C08F 8/34
U.S. Cl. 525—351 7 Claims

1. A method for making sulfonated aromatic organic polymer having aminoorganomercaptan groups attached to backbone sulfonyl radicals by covalent nitrogen-sulfur linkages which comprises

(A) effecting reaction in the presence of base between

(a) a halosulfonyl aromatic organic polymer and

(b) a thioether of the formula



to produce sulfonated aromatic organic polymer having aminoorganothioether groups attached to backbone sulfonyl radicals by covalent nitrogen-sulfur linkages,

(B) contacting the resulting sulfonated aromatic organic polymer of (A) with an effective amount of a phenolic acceptor and a sulfonic acid containing ether cleaving catalyst to produce the corresponding covalently bonded aminoorganomercaptan groups, and

(C) recovering the resulting aromatic organic polymer having covalently bonded aminoorganomercaptan groups from the mixture of (B),

where R is selected from hydrogen and a $C_{(1-8)}$ alkyl radical, R^1 is a divalent $C_{(1-13)}$ organic radical, R^2 is a cleavable organic radical and Y is selected from hydrogen, carboxy and nitrile.

4,455,410

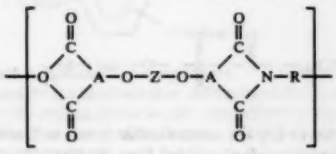
POLYETHERIMIDE-POLYSULFIDE BLENDS

Harold F. Giles, Jr., Cheshire, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Mar. 18, 1982, Ser. No. 359,257
Int. Cl.[3] C08G 69/48
U.S. Cl. 525—436 8 Claims

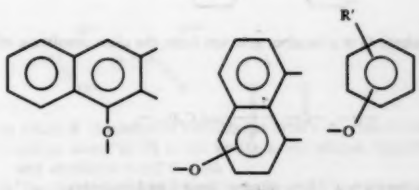
1. A composition comprising a blend of (a) a polysulfide of the following formula:

where R_1 is a divalent aliphatic or aromatic radical and n is a whole number from 1 to 5; and (b) a polyetherimide of the following formula:

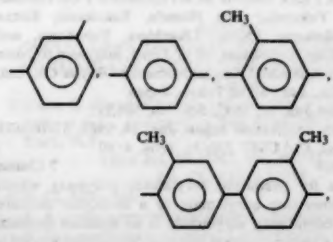


where a represents a whole number in excess of 1, the group

is selected from:



R' being hydrogen, lower alkyl or lower alkoxy, Z is a member of the class consisting of (1):



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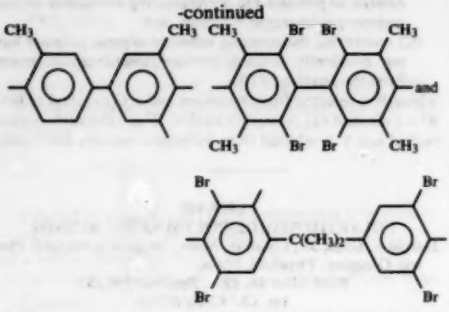
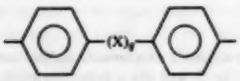
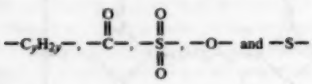


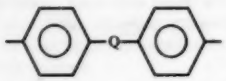
and (2) divalent organic radicals of the general formula:



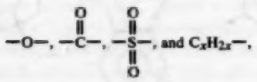
where X is a member selected from the class consisting of divalent radicals of the formulas:



where q is 0 or 1, y is a whole number from 1 to 5, and R is a divalent organic radical selected from the class consisting of (1) aromatic hydrocarbon radicals having from 6–10 carbon atoms and halogenated derivatives thereof, (2) alkylene radicals and cycloalkylene radicals having from 2–20 carbon atoms C(2-8) alkylene terminated polydiorganosiloxane, and (3) divalent radicals included by the formula:



where Q is a member selected from the class consisting of:



where x is a whole number from 1 to 5 inclusive.

4,455,411

PROCESS FOR PREPARING ACRYLAMIDE POLYMERS

Ryoji Handa, Yokosuka; Jun Hosoda, Yokohama; Kenzo Ariyama, Yokohama; Osamu Okushima, Yokohama, and Nobuo Kurashige, Yokohama, all of Japan, assignors to Nitto Kagaku Kogyo Kabushiki Kaisha; Mitsubishi Rayon Co., Ltd. and Diafloc Co., Ltd., all of Tokyo, Japan

Filed Jun. 14, 1983, Ser. No. 504,215

Claims priority, application Japan, Jun. 14, 1982, 57-100633

Int. Cl.³ C08F *220/56, 4/04, 4/40*

U.S. Cl. 526—208 **7 Claims**

1. A process for preparing acrylamide polymers which comprises polymerizing acrylamide or a monomer mixture predominantly comprising acrylamide in an aqueous medium with the use of a polymerization initiator comprising a combination of a persulfate, formaldehyde sodium sulfoxylate and 2,2'-azobis-2-amidinopropane.

4,455,412

PROCESS FOR POLYMERIZATION USING MONOPEROXYOXALIC ACID DIESTERS

Jack Lydiate, Viewbank, and Anthony L. Marchese, Glen Waverley, both of Australia, assignors to ICI Australia Limited, Melbourne, Australia

Filed May 17, 1983, Ser. No. 495,434

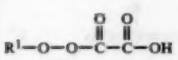
Claims priority, application Australia, Jun. 1, 1982, PF4235

Int. Cl.³ C08F *4/34, 14/06*

U.S. Cl. 526—227 **12 Claims**

1. A process for the production of a vinyl chloride polymer which process comprises the homo- or copolymerization of vinyl chloride at a temperature in the range of from 25° to 80° C. and at a temperature in the range of from 1 to 20 kg/cm² in the presence of from 0.01 to 2%, by weight of the monomer, of a diester of monoperoxyoxalic acid.

2. A process according to claim 1 wherein the diester is an ester of a monoperoxyoxalic acid ester of formula



wherein R^1 is selected from the group consisting of secondary alkyl, tertiary alkyl, benzyl and substituted benzyl.

4,455,413

METHOD FOR SUPPRESSING BUBBLING IN POLYMERIZATION OF VINYL CHLORIDE RESIN

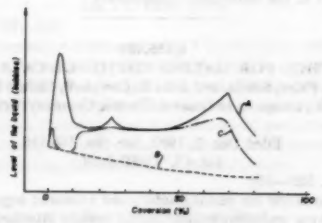
Yoshio Tomishima, Kobe; Teiji Kobayashi; Hiroshi Shibahara, both of Takasago, and Yasuhiro Nojima, Akashi, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 22, 1982, Ser. No. 390,845

Claims priority, application Japan, Jun. 22, 1981, 56-97273; Jun. 22, 1981, 56-97274

Int. Cl.³ C08F *2/18*

U.S. Cl. 526—344.2 **3 Claims**



1. In a method for production of vinyl chloride resin by the suspension of polymerization of vinyl chloride or a monomeric mixture comprising vinyl chloride as a main ingredient and other monomers co-polymerizable therewith using a polymerization vessel equipped with a reflux condenser, the improvement which comprises carrying out the polymerization while adjusting the operation of the reflux condenser by passing hot water or steam and then cooling water through the side of cooling water of the reflux condenser, whereby bubbling in the vessel is suppressed,

wherein the polymerization is initiated by supplying, prior to polymerization, hot water or steam to the cooling water side of the reflux condenser so as to keep the temperature of the cooling water side higher than the polymerization temperature, allowing the polymerization to start, and thereafter passing cooling water through the cooling

water side, whereby bubbling in the vessel is controlled at the initial stage of the polymerization.

4,455,414
PROCESS FOR PRODUCING AN ORGANOMETALLIC COPOLYMER

Seishi Yajima; Kiyohito Okamura; Yoshio Hasegawa, and Takemi Yamamura, all of Charai, Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

Division of Ser. No. 160,516, Jun. 18, 1980, Pat. No. 4,347,347. This application Jan. 6, 1982, Ser. No. 337,236

Claims priority, application Japan, Jun. 28, 1979, 54-80792; Mar. 21, 1980, 55-34909

Int. Cl.³ C08G 77/50, 77/60

U.S. Cl. 528—30 **3 Claims**

1. A process for producing an organometallic block polymer having a number average molecular weight of about 1000 to about 50000 and composed of a polycarbosilane portion and a polymetallosiloxane portion crosslinked with each other, which comprises mixing

(1) polycarbosilane with a number average molecular weight of about 500 to about 10000 having a main chain skeleton composed mainly of carbosilane units of the formula $\text{-Si-CH}_2\text{-}$, each silicon atom of said carbosilane units substantially having bonded thereto a side-chain group selected from the class consisting of hydrogen, lower alkyl and phenyl, with

(2) a polymetallosiloxane with a number average molecular weight of about 500 to about 10000 having a main chain skeleton composed of metalloxane units of the formula -M-O- wherein M represents a metal atom selected from the group consisting of Ti and Zr and siloxane units of the formula -Si-O-, most of the metal atoms M of said metalloxane units having bonded thereto a side-chain group selected from the class consisting of lower alkoxy, phenoxy and acetylacetoxy, most of the silicon atoms of said siloxane units having bonded thereto a side-chain group selected from the class consisting of lower alkyl and phenyl, the ratio of the total number of said metalloxane units to that of said siloxane units being in the range of from about 30:1 to about 1:30

in such proportions that the ratio of the total number of said carbosilane units to the sum of the total number of said metalloxane units and the total number of said siloxane units is in the range of from about 100:1 to about 1:100; and heating the resulting mixture in an organic solvent in an atmosphere inert to the reaction to bond at least some of the silicon atoms of said polycarbosilane to at least some of the metal atoms M and/or silicon atoms of said polymetallosiloxane through an oxygen atom.

4,455,415
POLYMERIC TERTIARY AND SECONDARY AMINES WITH A SILICA-TYPE BACKBONE, PROCESSES FOR THEIR PREPARATION, AND USE

Peter Panster, Rodenbach; Peter Kleinschmit, Hanau, and Wolfgang Buder, Rodenbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 10, 1982, Ser. No. 376,882

Claims priority, application Fed. Rep. of Germany, May 21, 1981, 3120214

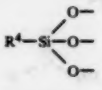
Int. Cl.³ C08G 77/00

U.S. Cl. 528—39 **49 Claims**

1. A polymeric tertiary or secondary organosiloxane amine with a silica-type backbone, comprised of units of the formula:

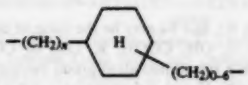
(1)

in which R^1 and R^2 represent a group of the formula

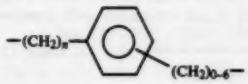


(2)

R^4 is alkylene having 3 to 10 C atoms or cycloalkylene having 5 to 8 C atoms or represents the units

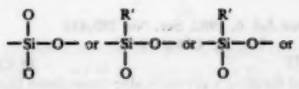


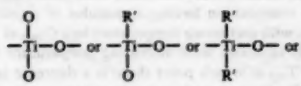
or

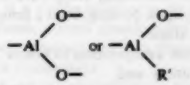


in which n indicates 1 to 6 methylene,

R^1 and R^2 can be identical or different and the free valencies of the oxygen atoms are saturated either by silicon atoms of further groups of the formula (2) and/or by crosslinking bridge members







in which R' is methyl or ethyl and in which the ratio of the silicon atoms in (2) to the bridge atoms silicon, titanium and aluminum is 1:0 to 1:10,

R^3 has the same general meaning as R^1 and R^2 or represents hydrogen, a linear or branched alkyl having 1 to 10 C atoms or cycloalkyl having 5 to 8 C atoms or benzyl.

4,455,416
CYCLIC UREA/GLYOXAL/POLYOL CONDENSATES AND THEIR USE IN TREATING TEXTILE FABRICS AND PAPER

William C. Floyd, Chester, and Bernard F. North, Rock Hill, both of S.C., assignors to Sun Chemical Corporation, New York, N.Y.

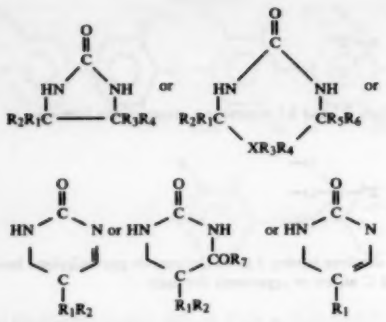
Filed Jul. 14, 1983, Ser. No. 513,629

Int. Cl.³ C08G 12/36

U.S. Cl. 528—245 **6 Claims**

1. A cyclic urea/glyoxal/polyol condensate.

2. The condensate of claim 1 wherein the cyclic urea is



wherein R_1, R_2, R_3, R_4, R_5, and R_6 may be the same or different and each may be H, OH, COOH, R, OR, or COOR wherein R is an alkyl or a substituted alkyl group having 1 to 4 carbon atoms; R_7 may be H or a polyol moiety; and X may be C, O, or N; when X is O, R_3 and R_4 are each zero; when X is N, R_3 or R_4 is zero.

4,455,417

PROCESS TO FORM AMORPHOUS, CRYSTALLIZABLE THERMOPLASTIC POLYMERS

Nicholas Vanderkooi, Jr., Pompton Plains; Philip E. Stevenson, South Orange, and Robert J. Welgos, Wharton, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jul. 6, 1982, Ser. No. 395,432
Int. Cl.³ C08G *63/02*
U.S. Cl. 528—272 **14 Claims**

1. A method of forming a crystallizable amorphous thermoplastic polymer composition having a modulus of rigidity G which decreases with increasing temperature to a G_{min} at T_{min} and subsequently increases with increasing temperature from G_{min} to G_{cry} at T_{cry} at which point there is a decrease in the rate at which G changes with increasing temperature, the polymer crystallizing below T_{cc} upon cooling from a temperature above T_{cc}, comprising the steps:

heating the amorphous polymer composition to below T_{cry};

forming the polymer composition; and

heating the formed polymer composition to from T_{min} to T_{cc} for a sufficient time to become crystalline.

9. The method as recited in claim **1** wherein the polymer composition comprises polyethylene terephthalate.

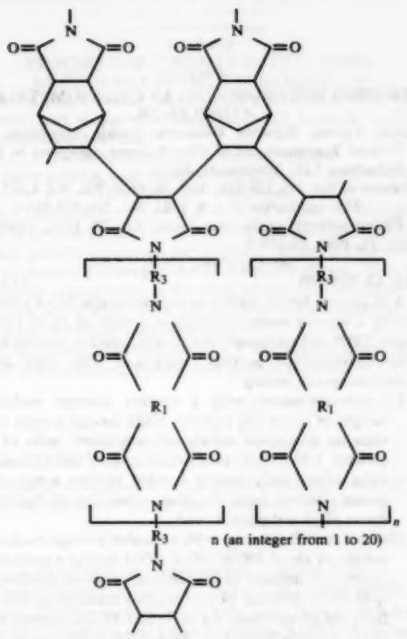
4,455,418

CHEMICAL APPROACH FOR CONTROLLING NADIMIDE CURE TEMPERATURE AND RATE

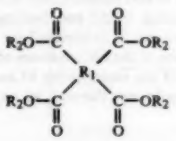
Richard W. Lauver, Rocky River, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 3, 1982, Ser. No. 404,809
Int. Cl.³ C08G *73/10*; C08F *222/40*
U.S. Cl. 528—322 **4 Claims**

1. A process for the production of a polyimide of the general formula:



wherein R_1 is a tetravalent aromatic radical and R_3 is a divalent aromatic radical, comprising the steps of: copolymerizing a reaction mixture comprising a maleimido end capped prepolymer reactant with a stoichiometric amount of norbornenylimido end-capped prepolymer reactant at a temperature below 300° C. and wherein the prepolymer reactants are generated by heating a solution of solvent and from about 30 percent to about 70 percent by weight of a mixture of compounds of the formulae:

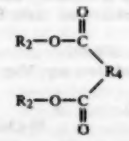


(a)

wherein R_1 is a tetravalent aromatic radical and at least two of R_2 are alkyl with the remainder being hydrogen: and

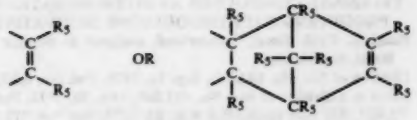
(b) $H_2N—R_3—NH_2$

wherein R_3 is a divalent aromatic radical: and



(c)

wherein R_2 is defined as in (a) and at least one R_2 in (c) being alkyl, and R_4 is



wherein R_5 is hydrogen or lower alkyl of 1–4 carbons, and wherein the ratio of (a):(b):(c) is n:(n+1):2, wherein n has a value from 1–20, to obtain curable polyimide prepolymers and including the step of promoting Diels-Alder retrogression by using norbornenyl end-capped pre-polymer reactant which has at least one electron-withdrawing electronegative substituent on at least one phenyl ring contained in the norbornenyl end-capped prepolymer reactant.

4,455,419

2'-MODIFIED KANAMYCINS AND PRODUCTION THEREOF

Hamao Umezawa; Sumio Umezawa, both of Tokyo; Yoshiharu Ishido, Chofu, and Shunzo Fukatsu, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

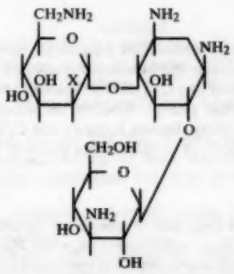
Filed Jul. 16, 1982, Ser. No. 398,838

Claims priority, application Japan, Jul. 22, 1981, 56-113578

Int. Cl.³ C07H *15/22*

U.S. Cl. 536—13.8 **9 Claims**

1. A 2'-modified kanamycin compound of the formula (I):



(I)

wherein X is selected from the group consisting of hydrogen, hydroxyl or amino, or a pharmaceutically acceptable acid-addition salt thereof.

4,455,420

4-AMINO-7-(5-DEOXY-BETA-D-RIBOFURANOSYL)-5-IODO-7H-PYRROLO[2,3-d] PYRIMIDINE

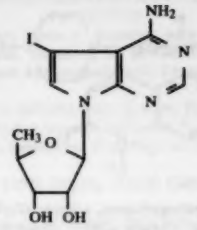
Rymantas Kazlauskas, Cromer, Australia, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jan. 13, 1983, Ser. No. 457,598

Int. Cl.³ C07H *17/00*

U.S. Cl. 536—24 **2 Claims**

1. A compound of the formula,



in substantially pure form.

4,455,421

11-DESOXY-16-ARYLOXY-ω-TETRANORPROSTAGLANDINS

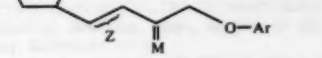
Jasjit S. Bindra, Groton; James F. Eggler, Stonington; Michael R. Johnson, Gales Ferry, and Thomas K. Schaaf, Old Lyme, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 13,899, Feb. 22, 1979, Pat. No. 4,365,077, which is a division of Ser. No. 849,752, Nov. 9, 1977, Pat. No. 4,157,341, which is a division of Ser. No. 589,386, Jun. 23, 1975, abandoned. This application Sep. 9, 1982, Ser. No. 416,266

Int. Cl.³ C07C *177/00*; C07D *257/04*

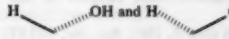
U.S. Cl. 548—252 **6 Claims**

1. The optically active compounds of the structure



their optical antipodes and the racemates thereof

wherein X and M are selected from the group consisting of keto,



W is a single bond or a cis double bond and Z is a single bond, a trans double bond or a triple bond with the proviso that when Z is a triple bond, W is a cis double bond;

Y is 5-tetrazolyl

and Ar is selected from the group consisting of phenyl, α-naphthyl, β-naphthyl and monosubstituted phenyl wherein the substituent is selected from the group consisting of fluoro, chloro, bromo, lower alkyl, lower alkoxy, phenyl and trifluoromethyl.

4,455,422

CARBOSTYRIL DERIVATIVES AND PHARMACEUTICAL COMPOSITION CONTAINING THE SAME

Kazuo Banno; Takafumi Fujioka; Masaaki Osaki, and Kazuyuki Nakagawa, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

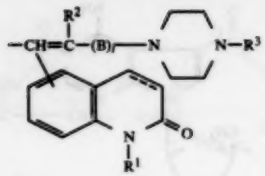
Division of Ser. No. 240,306, Mar. 4, 1981. This application Apr. 7, 1982, Ser. No. 366,335

Claims priority, application Japan, Mar. 6, 1980, 55-28805; Aug. 20, 1980, 55-115022

Int. Cl.³ C07D *401/00*; A61K *31/495*

U.S. Cl. 544—363 **22 Claims**

1. A carbostyril derivative or salt thereof represented by the general formula (1),



(I)

wherein R^1 is a hydrogen atom, a lower alkyl group, a phenyl-lower alkyl group, a lower alkenyl group or a lower alkynyl group; R^2 is a hydrogen atom or a lower alkyl group; B is a lower alkylene group; l is 0 or 1; R^3 is an unsubstituted or a substituted-phenyl group having 1 to 3 substituents, on the phenyl ring, selected from the group consisting of a halogen atom, a lower alkyl group, a lower alkoxy group, a lower alkoxy-carbonyl group, a carboxy group, a lower alkylthio group, a lower alkanoyl group, a hydroxy group, a nitro group, an amino group and a cyano group; or R^3 is a substituted-phenyl group having a lower alkylenedioxy group as the substituent on the phenyl ring, a phenyl-lower alkyl group or 1,2,3,4-tetrahydronaphthyl group; the carbon-carbon bond between 3- and 4-positions in the carbostyril skeleton is a single or double bond.

22. A central nervous system controlling agent containing at least one carbostyril derivative represented by the general formula (I) as claimed in claim 1 as the active ingredient.

4,455,423

PROCESS FOR THE MANUFACTURE OF CYANURIC ACID BY HEATING UREA AT A TEMPERATURE ABOVE ITS MELTING POINT

Jean Belot, Toulouse, France, assignor to CdF Chimie S.A., Paris, France

Filed Oct. 5, 1982, Ser. No. 432,872
Claims priority, application France, Mar. 24, 1982, 82 04960
Int. Cl.³ C07D *251/32*
U.S. Cl. 544—192 **11 Claims**

1. In a process for the manufacture of cyanuric acid by heating urea at a temperature above its melting point, the process comprising spraying one of melted urea or a concentrated solution of urea onto cyanuric acid granules, conducting the urea adsorbed on cyanuric acid granules through a heat exchange zone with heated inner walls wherein the urea impregnated granules are heated to a temperature of 220°-280° C., and wherein a recycle of a partial stream of cyanuric acid granules is conducted with water spraying on the granules before the recycle, said partial stream of granules being again sprayed wth one of melted urea or a concentrated solution of urea and conducted impregnated with urea into the heat exchange zone, the improvement comprising conducting the heating of the urea-impregnated granules through a heat exchange zone containing a heating rotor constituted by a tubular shaft having hollow discs fixedly secured thereto in a manner such that a heat transfer fluid is circulated through both said rotor and said discs to effect the heating, and eliminating the water spraying on the granules before the recycle, whereby a more uniform temperature of the urea impregnated cyanuric acid granules in the zone, greater adsorption capacity of the cyanuric acid granules to the urea, and elimination of formation of coarse cyanuric acid granules is achieved.

4,455,424

TRIAZINYL COMPOUNDS AS INTERMEDIATES FOR PRODUCING NAPHTHOQUINONE DERIVATIVES

Bansi L. Kaul, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 613,336, Sep. 15, 1975, Pat. No. 4,033,963, which is a division of Ser. No. 411,086, Oct. 30, 1973, Pat. No. 3,931,163. This application Feb. 24, 1977, Ser. No. 771,446
Int. Cl.³ C07D *251/20*
U.S. Cl. 544—218 **8 Claims**

1. A compound of formula III',

$$R_4''—CO—CH_2—A \qquad III'$$

wherein

R_4'' is unsubstituted C_{1-4} alkyl; monosubstituted C_{1-4} alkyl, wherein the substituent is selected from chloro, bromo, hydroxy and C_{1-4} alkoxy; unsubstituted C_{1-4} alkoxy; unsubstituted phenoxy; unsubstituted phenyl; phenyl substituted by 1 to 3 substituents independently selected from chloro, bromo, hydroxy and C_{1-4} alkoxy; or a group of formula

wherein each of R_{30} and R_{31}, independently, is hydrogen; unsubstituted C_{1-4} alkyl; monosubstituted C_{1-4} alkyl, wherein the substituent is selected from chloro, bromo, hydroxy and C_{1-4} alkoxy; unsubstituted phenyl; phenyl substituted by 1 to 3 substituents independently selected from chloro, bromo, hydroxy and C_{1-4} alkoxy; a group of formula

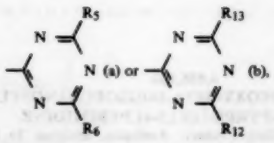
$$R—Y—$$

wherein R is unsubstituted C_{1-4} alkyl; monosubstituted C_{1-4} alkyl, wherein the substituent is selected from chloro, bromo, hydroxy and C_{1-4} alkoxy; unsubstituted phenyl; or monosubstituted phenyl, wherein the substituent is selected from chloro, bromo, hydroxy and C_{1-4} alkoxy; and Y is —O—CO— or $—SO_2—$; or a group of formula

$$R'—Z—$$

wherein R' is hydrogen or one of the significances of R; and Z is —CO—, —NR'CO— or $—NR'SO_2—$, wherein R' is as defined above, with the proviso that when one of R_{30} and R_{31} is unsubstituted phenyl, substituted phenyl, a group R—Y— or a group R'—Z— as defined above, the other has a significance other than unsubstituted phenyl, substituted phenyl, a group R—Y— or a group R'—Z—; and

A is a radical of formula (a) or (b),



wherein

each of R_5 and R_6, independently, is hydrogen; fluoro; chloro; bromo; hydroxy; C_{1-4} alkyl; C_{1-4} alkoxy; unsubstituted phenoxy; or a group of formula

wherein R_{30} and R_{31} are as defined above; and each of R_{12} and R_{13}, independently, is hydrogen; C_{1-4} alkoxy; unsubstituted phenoxy; or a group of formula

wherein R_{30} and R_{31} are as defined above; with the provisos that: (i) when A is a radical of formula (a), R_4'' is unsubstituted C_{1-4} alkyl, monosubstituted C_{1-4} alkyl as defined above, unsubstituted phenyl; phenyl substituted as defined above, or a group of formula

wherein R_{30} and R_{31} are as defined above; and (ii) when A is a radical of formula (b), R_4'' is C_{1-4} alkoxy or unsubstituted phenoxy.

4,455,425

BICYCLIC AMIDINE-ISOCYANATE ADDUCTS

Rolf-Volker Meyer; Hans J. Kreuder, both of Krefeld, and Eckhard de Cleur, Duisburg, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

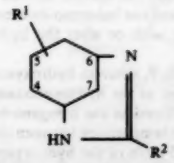
Division of Ser. No. 317,299, Nov. 2, 1981, Pat. No. 4,424,353. This application Sep. 24, 1982, Ser. No. 423,025

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041834

Int. Cl.³ C07D *239/70*; C07C *129/00*; C08G *59/18*

U.S. Cl. 544—253 **1 Claim**

1. The addition products obtainable from reacting an amidine with a polyisocyanate having 4 to 25 carbon atoms and from 2 to 4 isocyanate moieties at from 50° to 140° C. in a proportion providing from 0.8 to 3 isocyanate moieties per NH moiety of the amidine, wherein said amidine is a bicyclic amidine of the formula



wherein

R^1 is hydrogen or alkyl having from 1 to 4 carbon atoms, and R^2 is a hydrogen, alkyl having from 1 to 18 carbon atoms, cycloalkyl having 5 to 14 carbon atoms, aralkyl having 7 to 16 carbon atoms or aryl having 6 to 20 carbon atoms.

4,455,426

TETRAHYDROPYRIMIDINE-ISOCYANATE ADDITION PRODUCTS

Rolf-Volker Meyer; Hans J. Kreuder, both of Krefeld, and Eckhard de Cleur, Duisburg, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

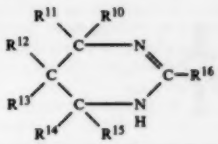
Division of Ser. No. 317,299, Nov. 2, 1981, Pat. No. 4,424,353. This application Sep. 30, 1982, Ser. No. 428,852

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041834

Int. Cl.³ C07D *239/06, 239/70*; C08G *59/18*

U.S. Cl. 544—253 **2 Claims**

1. Addition products obtainable from monoisocyanates having from 2 to 20 carbon atoms and tetrahydropyrimidines of the formula



wherein R^{10} to R^{16} are each hydrogen, alkyl having from 1 to 6 carbon atoms, cycloalkyl having from 5 to 10 carbon atoms, aralkyl having from 7 to 12 carbon atoms, aryl having from 6 to 15 carbon atoms, and also together two geminal or vicinal substituents R^{10} to R^{16} together with the carbon atom to which they are attached comprise a cycloaliphatic ring having 5 to 6 carbon atoms.

4,455,427

PYRIDYL-SUBSTITUTED-BENZOFURANS

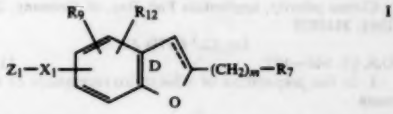
Roy A. Johnson, Brookline, Mass., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 385,622, Jun. 8, 1982, abandoned, which is a continuation-in-part of Ser. No. 279,374, Jul. 1, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 430,293

Int. Cl.³ C07D *405/12*

U.S. Cl. 546—269 **10 Claims**

1. A compound of the formula I:



I

wherein Z_1 is

(a) 4-pyridinyl,

(b) 3-pyridinyl,

(c) 3-pyridinyl substituted at the 4 position by

(1) methyl,

(2) —OCH^3,

(3) —$N(CH_3)_2$, or

(4) —NH_2, or

(d) 3-pyridinyl substituted at the 2, 4, 5, or 6 position by chlorine;

wherein X_1 is

(a) —O—,

(b) —S—,

(c) —S(O)—,

(d) —$S(O)_2$—,

(e) —CH_2—$N(R_3)$—, or

(f) —$N(R_3)$—CH_2—,

wherein R_1 is hydrogen, a pharmacologically acceptable cation, (C_1–C_{12}) alkyl, (C_3–C_{10}) cycloalkyl, (C_7–C_{12}) aralkyl,

phenyl, phenyl mono-, di-, or trisubstituted by chloro, (C_1–C_3) or alkyl, or phenyl para-substituted by
(a) —NHCO—R_{25},
(b) —O—CO—R_{26},
(c) —CO—R_{24},
(d) —O—CO—(p—Ph)—R_{27}, or
(e) —CH=N—NH—CO—NH_2,
wherein R_{24} is phenyl or acetamidophenyl, R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or amino, R_{26} is methyl, phenyl, amino or methoxy; and R_{27} is hydrogen or acetamido, and wherein —(p-Ph) is 1,4-phenylene;
wherein R_3 is
(a) hydrogen or
(b) (C_1–C_3)alkyl;
wherein R_4 is
(a) hydrogen,
(b) (C_1–C_4)alkyl, or
(c) phenyl;
wherein R_7 is
(a) hydrogen,
(b) —CH_2OH,
(c) —$COOR_1$,
(d) —$CH_2N(R_4)_2$,
(e) —CN
(f) $CON(R_4)_2$, or
(g) —C(O)—R_4;
wherein R_9 and R_{12} are the same or different and are
(a) hydrogen,
(b) (C_1–C_4)alkyl
(c) fluoro
(d) chloro,
(e) bromo,
(f) —OCH_3, or,
(h) when taken together and attached to contiguous carbon atoms, —O—CH_2—O—;
wherein D represents a single or a double bond; and
wherein m is an integer from 0 to 4, inclusive; including pharmacologically acceptable acid addition salts thereof; and
when D represents a single bond, an enantiomer or a racemic mixture of enantiomers thereof.

4,455,428

PREPARATION OF HETARYLOXYACETAMIDES

Hans-Joachim Diehr, Wuppertal, and Uwe Priesnitz, Solingen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

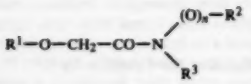
Filed Nov. 18, 1982, Ser. No. 442,924

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1981, 3148839

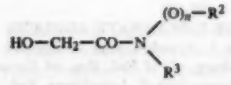
Int. Cl.³ C07D 277/34

U.S. Cl. 548—187 **11 Claims**

1. In the preparation of a hetaryloxyacetamide of the formula



in which
R^1 represents a five-membered heterocyclic radical which contains an oxygen or sulphur atom and in addition 1 to 3 nitrogen atoms and which is optionally substituted by halogen, cyano, nitro, amino, alkylamino, arylamino, dialkylamino, alkylcarbonylamino, alkylcarbonyl, carboxyl, alkoxycarbonyl, carbamoyl, alkylaminocarbonyl, dialkylaminocarbonyl, arylaminocarbonyl (which is optionally substituted by halogen, nitro or alkyl), aryl (which is optionally substituted by halogen, cyano, nitro, alkyl or alkoxy), aralkyl (which is optionally substituted by halogen), optionally halogen-substituted alkoxy, alkenoxy, alkinoxy, alkoxycarbonylalkoxy, aralkoxy or aryloxy, optionally halogen-substituted alkylthio, alkenylthio, alkinylthio, alkoxycarbonylalkylthio, aralkylthio or arylthio, optionally halogen-substituted alkylsulphinyl or alkylsulphonyl, optionally halogen-substituted alkyl, alkenyl, alkinyl, alkoxyalkyl, aralkoxyalkyl, aryloxyalkyl, alkylthioalkyl, alkylsulphinylalkyl, alkylsulphonylalkyl, arylthioalkyl, arylsulphinylalkyl, arylsulphonylalkyl, carboxyalkyl or alkoxycarbonylalkyl, or optionally substituted aminocarbonylalkyl, cyanoalkyl or cycloalkyl, or which is optionally benzo-fused, the benzo radical optionally being substituted by halogen, alkyl, halogenoalkyl, alkoxy, halogenoalkoxy, alkylthio, halogenoalkylthio, amino, alkylamino, dialkylamino, nitro, cyano, alkoxycarbonyl or optionally halogensubstituted alkylenedioxy,
or in which
R^1 represents a tetrazolyl radical which is substituted by phenyl (the phenyl radical optionally being substituted by halogen, cyano, nitro and/or by an optionally halogen-substituted radical selected from alkyl, alkoxy, alkylthio and alkylenedioxy),
and in which
n is 0 or 1 and
R^2 and R^3, which can be identical or different, individually represent an optionally substituted radical selected from alkyl, alkenyl, alkinyl, cycloalk(en)yl, aralkyl and aryl, or, in the case where n is 0, R^2 and R^3 together with the nitrogen atom to which they are bonded, form an optionally substituted, optionally partially unsaturated and optionally benzo-fused monocyclic or bicyclic radical, which optionally contains further heteroatoms,
by reacting a hydroxyacetamide of the formula



with a halogeno-hetarene of the formula

R^1-Hal

in which
Hal represents a fluorine, chlorine, bromine or iodine atom, in the presence of potassium hydroxide and in the presence of a diluent at a temperature between about −50° and +50° C., the improvement which comprises using the potassium hydroxide in the form of solid anhydrous potassium hydroxide and using an aprotic diluent in which the potassium hydroxide is virtually insoluble.

9. A process according to claim **1**, wherein the potassium hydroxide is initially introduced into the aprotic diluent, the hydroxyacetamide is then added, and the halogeno-hetarene is then added either simultaneously with or after the hydroxyacetamide, while stirring.

10. A process according to claim **9**, wherein hydroxyacetic acid N,N-diethylamide is employed as the hydroxyacetamide and 2,4,5-trichlorothiazole is employed as the halogeno-hetarene, the reaction is carried out at a temperature between about −20° and +10° C., about 1 to 1.5 mols of the hydroxyacetamide are employed per mol of the halogeno-hetarene, about 1.2 to 2 mols of potassium hydroxide are employed per mol of halogeno-hetarene, and an optionally chlorinated hydrocarbon, an ether, a dialkyl ketone, a carboxylic acid alkyl ester, a carboxylic acid amide, a sulphoxide or a sulphone is used as the aprotic diluent.

4,455,429

OXAZOLINES OF 2-(ALKYLTHIO)SUCCINIC ACIDS AS AN ADDITIVE FOR DRILLING MUDS

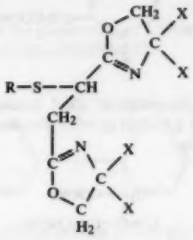
Antonio Gutierrez, Mercerville; Darrel W. Brownawell, Scotch Plains, both of N.J.; Robert C. Portnoy, Houston, Tex., and Stanley J. Brois, Westfield, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 428,827, Sep. 30, 1982. This application Sep. 21, 1983, Ser. No. 534,272

Int. Cl.³ C07D *263/08*; C09K *7/00*

U.S. Cl. 548—239 4 Claims

1. A bis-oxazoline of the formula:



wherein R represents an alkyl group of 6 to 50 carbons and X is selected from the group consisting of an alkyl or hydroxyalkyl group and at least one of the X substituents being a hydroxy alkyl group of the structure $-(CH_2)_nOH$ where n is 1 to 3.

4,455,430

PROCESS FOR PREPARING TRICHOLOMIC ACID AND DERIVATIVES THEREOF

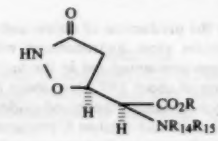
Robert C. Kelly, and Wendell Wierenga, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 062,499, Jul. 31, 1979, which is a continuation-in-part of Ser. No. 906,276, May 15, 1978, abandoned. This application Jan. 28, 1981, Ser. No. 229,256

Int. Cl.³ C07D *261/04*

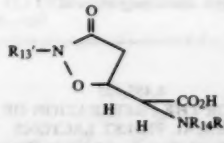
U.S. Cl. 548—243 2 Claims

1. A process for preparing racemic mixtures and optically active isomers of compounds having the formula



II

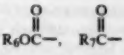
which comprises the deprotection of racemic mixtures and optically active isomers of compounds having the formula



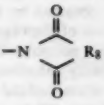
II'

wherein R is selected from the group consisting of hydrogen, alkyl of from 1 to 12 carbon atoms, inclusive, halogenated alkyl of from 1 to 5 carbon atoms, inclusive, and 1 to 3 halogen atoms, inclusive, aryl of from 6 to 20 carbon atoms, inclusive, aralkyl of from 7 to 20 carbon atoms, inclusive, and substituted aralkyl of from 7 to 20 carbon atoms inclusive; R'_{13} is selected from the group

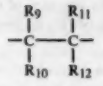
wherein R'_6 is alkyl of from 1 to 8 carbon atoms, inclusive, halogenated alkyl of from 1 to 5 carbon atoms, inclusive, and 1 to 3 halogen atoms, and aralkyl of from 7 to 20 carbon atoms, inclusive, R_{14} and R_{15} are selected from the group consisting of hydrogen,



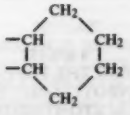
or when taken together with the nitrogen form the group



wherein R_6 is alkyl of from 1 to 8 carbon atoms, inclusive, halogenated alkyl of from 1 to 5 carbon atoms, inclusive, and 1 to 3 halogen atoms, inclusive, aralkyl of from 7 to 20 carbon atoms, inclusive, and substituted aralkyl of from 7 to 20 carbon atoms, inclusive, R_7 is selected from the group consisting of alkyl of from 1 to 12 carbon atoms, inclusive, aryl of from 6 to 20 carbon atoms, inclusive, aralkyl of from 7 to 20 carbon atoms, inclusive, and substituted aralkyl of from 7 to 20 carbon atoms, inclusive, and R_8 is selected from the group consisting of



Where R_9, R_{10}, R_{11} and R_{12} are selected from the group consisting of hydrogen and alkyl of from 1 to 5 carbon atoms, inclusive,



orthointerphenylene, and substituted orthointerphenylene, with the provisos that other than when R_{14} and R_{15} form a ring with the nitrogen atom, one of R_{14} and R_{15} must always be hydrogen; R'_{13} must be a group that can be selectively removed in the presence of $NR_{14}R_{15}$; and when R in the formula II'' is other than hydrogen the deprotected compound must be esterified.

4,455,431

METHOD FOR MAKING BIS-ETHERPHTHALIMIDES

Frank J. Williams, III, Scotia, N.Y., and Brent A. Dellacoletta, Evansville, Ind., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 5, 1982, Ser. No. 354,978

Int. Cl.³ C07D *209/48*

U.S. Cl. 548—461 10 Claims

1. In the process for making bisetherphthalimide involving the steps of,

(A) nitrating N-organophthalimide with concentrated nitric acid,

(B) isolating the resulting nitro-N-organophthalimide from the nitration mixture of (A) as a solution in a polychlorinated $C_{(1-3)}$ alkane selected from methylene chloride, trichloroethane and 1,2-dichloroethane,

(C) treating the polychlorinated $C_{(1-3)}$ alkane solution of (B), to remove traces of mineral acid,

(D) evaporating the polychlorinated $C_{(1-3)}$ alkane from the solution of (C) to recover the nitro-N-organophthalimide,

(E) reacting the nitro-N-organophthalimide of (D) with an alkali metal bisphenoxide salt,

the improvement which consists essentially of

(1) adding the nitration mixture of (C) directly to a mixture of alkali metal bisphenoxide salt and a nonpolar organic solvent while the latter is refluxing, in amounts sufficient to produce a reaction mixture having about two moles of nitro-N-organophthalimide, per mole of bisphenoxide salt, which refluxing mixture of bisphenoxide salt and nonpolar organic solvent is obtained by heating under azeotropic conditions, a mixture of bisphenoxide, water, alkali metal hydroxide, and said nonpolar organic solvent until the mixture is substantially anhydrous,

(2) distilling a major amount of the nonpolar organic solvent at temperatures of from 80° C. to 180° C. from the resulting mixture of (1), to provide for the complete removal of the polychlorinated $C_{(1-3)}$ alkane used in the treated solution of (C),

(3) adding to the resulting mixture of (2), and effective amount of a phase transfer catalyst,

(4) refluxing the resulting mixture of (3),

(5) extracting the resulting mixture of (4) with aqueous alkali metal hydroxide and

(6) effecting the removal of nonpolar organic solvent from the organic phase resulting from the extraction step of (5), whereby the handling and isolation of the nitrophthalimide solids of (C), prior to the reaction of such solids with the alkali metal bisphenoxide salt of (E) is eliminated.

4,455,432

PROCESS FOR THE PREPARATION OF 1-(4-CHLORO-BENZOYL)-5-METHOXY-2-METHYL-3-INDOLYL-ACETOHYDROXAMIC ACID

Ugo Chiodoni, Milan, Italy, assignor to Unibios S.p.A., Trecate, Italy

Filed Mar. 22, 1982, Ser. No. 360,819

Claims priority, application Italy, Apr. 3, 1981, 20918 A/81

Int. Cl.³ C07D *209/28*

U.S. Cl. 548—501 **3 Claims**

1. A process for the preparation of 1-(4-chlorobenzoyl)-5-methoxy-2-methyl-3-indolyl-acetohydroxamic acid which comprises the steps of: bringing together 1-(4-chlorobenzoyl)-5-methoxy-2-methyl-3-indolyl-acetic acid and a lower alkylhalocarbonate in the presence of a tertiary organic nitrogen base and an inert organic solvent with agitation and for a period of time sufficient to form a reaction mixture comprising an anhydride reaction product; without isolating said anhydride reaction product, adding hydroxylamine thereto with agitation for a period of time sufficient to form 1-(4-chlorobenzoyl)-5-methoxy-2-methyl-3-indolyl-acetohydroxamic acid; and recovering said acetohydroxamic acid, the several reactants being employed in substantially equimolecular amounts and the reaction steps being conducted in a temperature range of −10° to 50° C.

4,455,433

PROCESS FOR PRODUCING SUBSTITUTED PYRROLES

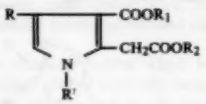
Everett M. Marlett, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 317,543, Nov. 2, 1981, abandoned. This application Dec. 8, 1982, Ser. No. 447,955

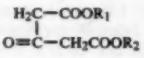
Int. Cl.³ C07D *207/16*

U.S. Cl. 548—531 **16 Claims**

1. In a process for preparing an alkyl 1,4-dialkyl-3-alkoxycarbonylpyrrole-2-acetate corresponding to the formula:



by reacting a chloromethyl alkyl ketone of the formula $ClCH_2COR$ with a dialkyl acetone dicarboxylate corresponding to the formula:



and an alkylamine of the formula $R'NH_2$, in which the formulas R, R', R_1, and R_2 are independently selected from lower alkyl groups, said reaction being conducted in a reaction medium comprising an organic solvent; the improvement which comprises conducting the reaction in the presence of a yield-enhancing amount of an acid having a dissociation constant of at least 1.3×10^{-5} at 25° C.

4,455,434

PROCESS FOR THE PREPARATION OF MALEIC ANHYDRIDE

Dennis E. Dria, Cleveland Heights, and Noel J. Bremer, Kent, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 392,961, Jun. 28, 1982, Pat. No. 4,400,306. This application Feb. 28, 1983, Ser. No. 470,681

Int. Cl.³ C07D *307/60*

U.S. Cl. 549—260 **6 Claims**

1. A process for the production of maleic anhydride by the oxidation of 4 carbon atom hydrocarbons with molecular oxygen or an oxygen containing gas in the vapor phase at a reaction temperature of about 250° C. to about 600° C. in the presence of a catalyst containing the mixed oxides of vanadium and phosphorus wherein said catalyst is prepared by

impregnating a preformed catalyst support with a first solution of a vanadyl alkoxide,

contacting the impregnated support with a second solution of the phosphorus component to form the catalyst in situ, drying the catalyst containing support.

4,455,435

METHOD FOR THE PREPARATION OF LEUCO CRYSTAL VIOLET LACTONE

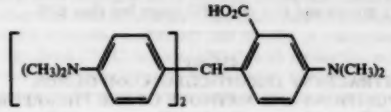
John P. Dundon, North Branch, and Erwin Klingsberg, Mountainside, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jan. 22, 1979, Ser. No. 5,254

Int. Cl.³ C07D *307/78*; C09B *11/10*

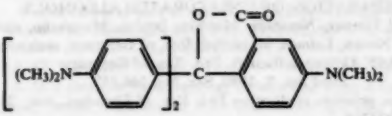
U.S. Cl. 549—389 **10 Claims**

1. A method for the preparation of 2-[4,4'-bis(dimethylamino)benzhydryl]5-dimethylaminobenzoic acid (I):



which comprises condensing essentially one molar proportion of each of N,N-dimethylaniline, p-dimethylaminobenzaldehyde and m-dimethylaminobenzoic acid with about 0.5 to 1 molar proportion of urea and about 1 to 4 molar proportions of a strong acidic condensing agent at a temperature of about 60°–100° C.

6. A method for the preparation of 3,3-bis(4-dimethylaminophenyl)-6-dimethylaminophthalide (II):



which comprises (1) condensing essentially one molar proportion of each of N,N-dimethylaniline, p-dimethylaminobenzaldehyde, and m-dimethylaminobenzoic acid with about 0.5 to 1 molar proportion of urea in the presence of about 1 to 4 molar proportions of a strong acidic condensing agent at a temperature of 60° to 100° C.; (2) adding a base thereto in an amount sufficient to render the reaction mixture alkaline and form the salt of 2-[4,4'-bis(dimethylamino)-benzhydryl]-5-dimethylaminobenzoic acid; (3) extracting the alkaline reaction mixture with an aromatic hydrocarbon solvent, or a mixture thereof with a water-immiscible alkane, to remove impurities from said reaction mixture; and (4) oxidizing with an oxidizing agent said reaction mixture to produce (II).

4,455,436
N-ACYL-O-PHENYLENEDIAMINES

Hans R. Meyer, Binningen, and Max Siegrist, Lausen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

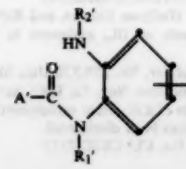
Division of Ser. No. 092,592, Nov. 8, 1979, Pat. No. 4,313,846. This application Aug. 14, 1981, Ser. No. 292,961

Claims priority, application Switzerland, Nov. 20, 1978, 11883/78

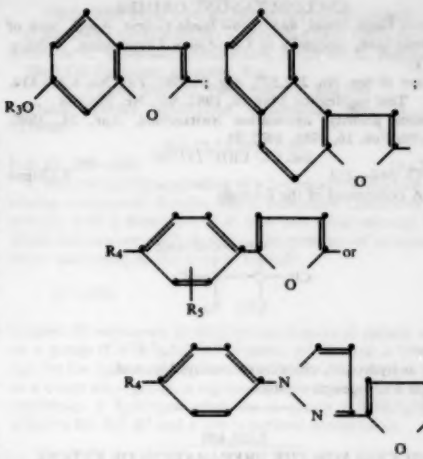
Int. Cl.³ C07D *307/54, 307/86, 307/92, 405/04*

U.S. Cl. 549—467 **4 Claims**

1. A N-acyl-o-phenylenediamine of the formula



wherein A is a radical of the formula



wherein R_3 is alkyl of 1 to 4 carbon atoms which is unsubstituted or substituted by phenyl or alkoxy of 1 to 4 carbon atoms or alkenyl of 3 or 4 carbon atoms, each of R_4 and R_5 independently is hydrogen, chlorine or methyl, each of R_1' or R_2' independently is alkyl of 1 to 4 carbon atoms, alkenyl of 3 or 4 carbon atoms, cyanoalkyl of 2 to 4 carbon atoms, carbamoylmethyl, alkoxycarbonylmethyl containing 1 to 3 carbon atoms in the alkoxy moiety, benzyl, hydroxyalkyl of 2 or 3 carbon atoms or phenyl, but only one of R_1' and R_2' can be phenyl, and R_6 is hydrogen, chlorine, alkyl of 1 to 4 carbon atoms, $CONY_1Y_2$ or $SO_2NY_1Y_2$ wherein Y_1 is hydrogen, alkyl of 1 to 4 carbon atoms, alkenyl of 3 or 4 carbon atoms, hydroxyalkyl of 2 to 4 carbon atoms, alkoxyalkyl containing a total of 3 to 6 carbon atoms, cyclohexyl or benzyl, and Y_2 is hydrogen, alkyl of 1 to 4 carbon atoms, or Y_1 and Y_2 together with the nitrogen atom to which they are attached can also form a morpholine ring, alkoxycarbonyl containing 2 to 5 carbon atoms or sulfophenyl ester, trifluoromethyl, alkylsulfonyl of 1 to 4 carbon atoms or arylsulfonyl.

4,455,437
AMINOALKYL ESTERS OF 2-NITRO-5-(O-CHLORO-P-TRIFLUOROMETHYL-PHENOXY)-BENZOIC ACID

Dieter Dürr, Bottmingen; Otto Rohr, Therwil, and Beat Böhner, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

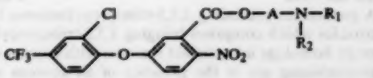
Filed Dec. 28, 1979, Ser. No. 107,983

Claims priority, application Switzerland, Jan. 9, 1979, 168/79

Int. Cl.³ C07C *79/46*

U.S. Cl. 560—21 **4 Claims**

1. An aminoalkyl ester of 2-nitro-5-(o-chloro-p-trifluoromethylphenoxy)-benzoic acid of the formula



wherein

A is a branched-chain or straight-chain C_2–C_4-alkylene group,

R_1 is C_1–C_4-alkyl which is unsubstituted or substituted by halogen or hydroxyl, or is allyl or propynyl, and

R_2 is hydrogen or has the same meaning as R_1,

and acid addition salts thereof.

4,455,438

CYCLOBUTANONE OXIMES

Laurenz Gsell, Basel, and Jean-Claude Gehret, Aesch, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

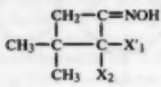
Division of Ser. No. 252,527, Apr. 9, 1981, Pat. No. 4,348,414. This application May 10, 1982, Ser. No. 376,988

Claims priority, application Switzerland, Apr. 24, 1980, 3170/80; Feb. 16, 1981, 1007/81

Int. Cl.³ C07C *131/00*

U.S. Cl. 564—253 8 Claims

1. A compound of the formula



wherein

X_1' is hydrogen, chlorine or methylthio, and

X_2 is hydrogen or methyl.

4,455,439

PROCESS FOR THE PREPARATION OF KETENE

Dieter Arnold, Königstein; Jörg Bartels, Eppstein; Heinrich Lenzmann, Kelkheim; Günter Jacobsen, Offenbach am Main; Heinz Wendt, Sulzbach, and Manfred Stoltenberg, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 4, 1981, Ser. No. 327,510

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1980, 3046219

Int. Cl.³ C07C *45/51*

U.S. Cl. 568—302 4 Claims

1. A process for the preparation of ketene by thermal, catalytic cracking of acetic acid under reduced pressure and by cooling the hot cracked gases to substantially 0° C. to −10° C., so that water, unreacted acetic acid and acetic anhydride are condensed, which process comprises passing the cracked gas through at least one shell-and-tube heat exchanger in tandem and having a volume V[m^3], a pressure drop of 50 to 150 mbars and a surface/volume ratio of 60 to 120 m^{-1}, and drawing off the condensate, wherein the quantity of acetic acid employed for the thermal cracking is at a rate of 0.5 to 2.5 tons per hour per cubic meter, for each cubic meter of the volume V of the at least one shell-and-tube heat exchanger.

4,455,440

METHOD FOR PRODUCING 1,3,5-TRIISOPROPYLBENZENE TRIHYDROPEROXIDES

Tsutomu Chiyoda, Toyonaka; Makoto Nakamura, Ibaraki, and Shinichi Hasegawa, Otsu, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 15, 1982, Ser. No. 441,906

Claims priority, application Japan, Nov. 19, 1981, 56-186659

Int. Cl.³ C07C *179/053*

U.S. Cl. 568—565 3 Claims

1. A method for producing 1,3,5-triisopropylbenzene trihydroperoxides which comprises bringing 1,3,5-triisopropylbenzene or its homologs into contact reaction with oxygen or an oxygen-containing gas in the presence of an aqueous alkali solution, wherein said contact reaction is conducted at a reaction temperature of 60° to 120° C., the pH of the reaction solution phase is 8 to 11 and the amount of said aqueous alkali solution is 0.1 to 3 times by weight based on the organic layer as raw material, and wherein the reaction is finished at a point when the yield of 1,3,5-triisopropylbenzene trihydroperoxide (THPO) is not less than 20% and the total of the yield of THPO carbinols having a structure in which part or all of the three hydroperoxy groups of THPO have been replaced by hydroxy groups and that of THPO is not less than 60%.

4,455,441

ATTRACTANT TERMITICIDAL COMPOSITIONS AND METHODS OF USE THEREFOR

Glenn D. Prestwich, Stony Brook, N.Y., assignor to Research Foundation of State University of New York, Albany, N.Y.

Filed Sep. 24, 1982, Ser. No. 423,006

Int. Cl.³ C07C *33/42, 31/34;* A61K *31/045;* A01N *31/02*

U.S. Cl. 568—843 39 Claims

1. An alpha-fluoro-omega-hydroxy straight chain alkene having a chain length of from 10 to 16 carbon atoms and having from 1 to 4 double bonds therein.

4,455,442

PREPARATION OF UNSATURATED ALCOHOLS

Michael Horner, Neustadt; Matthias Irgang, Mannheim, and Axel Nissen, Leimen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 8, 1980, Ser. No. 166,857

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934251

Int. Cl.³ C07C *29/14, 33/02, 33/03, 33/20*

U.S. Cl. 568—875 4 Claims

1. In a process for the preparation of olefinically unsaturated alcohols (I) by selective hydrogenation of the corresponding unsaturated carbonyl compound (II) in the liquid phase with hydrogen in the presence of a noble metal catalyst, the improvement which comprises using as the catalyst ruthenium, rhodium, osmium, iridium or platinum and carrying out the hydrogenation in the presence of from 5 to 40% by weight, based on (II), of a tertiary amine.

4,455,443

NEMATIC HALOGEN COMPOUND

Haruyoshi Takatsu, Kodaira, and Hisato Sato, Tokyo, both of Japan, assignors to Dainippon Inc. and Chemicals, Inc., both of Tokyo, Japan

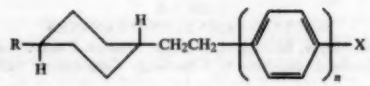
Filed Sep. 1, 1982, Ser. No. 413,798

Claims priority, application Japan, Sep. 10, 1981, 56-141728; Sep. 10, 1981, 56-141730; Jul. 8, 1982, 57-117848

Int. Cl.³ C09K *3/34;* G02F *1/13;* C07C *25/18*

U.S. Cl. 570—129 15 Claims

1. A compound of the formula



wherein R represents a linear alkyl group having 1 to 7 carbon atoms, n represents an integer of 1 or 2, and X represents F when n is 1 and F or Cl when n is 2.

4,455,444

LOW TEMPERATURE PROCESS FOR SEPARATING HYDROCARBONS

Santi Kulprathipanja, Hoffman Estates, and Richard W. Neuzil, Downers Grove, both of Ill., assignors to Uop Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 288,570, Jul. 30, 1981, Pat. No. 4,367,364. This application Nov. 12, 1982, Ser. No. 441,142

The portion of the term of this patent subsequent to Jan. 4, 2000, has been disclaimed.

Int. Cl.³ C07C *7/12*

U.S. Cl. 585—826 11 Claims

1. A process for separating a normal C_{17} or lighter paraffin hydrocarbon from a mixture of the same with another struc-

tural class of hydrocarbon selected from cyclic hydrocarbons other than benzene and branched chain paraffin hydrocarbons, which comprises contacting said mixture at a temperature of from about 120° C. to about 140° C. with zeolite free molecular sieve comprising silicalite to effect the selective retention of said normal hydrocarbon by said molecular sieve.

4,455,445

SEPARATION OF C_4 OLEFINS

Richard W. Neuzil, Downers Grove, and Santi Kulprathipanja, Hoffman Estates, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 357,371, Mar. 12, 1982, abandoned. This application Dec. 20, 1982, Ser. No. 451,525

Int. Cl.³ C07C *7/13*

U.S. Cl. 585—820 **18 Claims**

1. In a process for separating isobutylene from a feed containing isobutylene and at least one normal C_4 hydrocarbon comprising contacting said feed at retention conditions with a molecular sieve comprising silicalite to effect selective retention of said normal C_4 hydrocarbon, removing said isobutylene from contact with said molecular sieve, and recovering said normal C_4 hydrocarbon by displacement from said molecular sieve, the improvement which comprises performing said displacement with a displacement fluid consisting essentially of pentene-1 in solution with a diluent not selectively retained by said molecular sieve at displacement conditions.

4,455,446

METHOD OF REMOVAL OF COS FROM PROPYLENE

George L. Brownell, Monroeville Borough, Pa.; Melba Collier, Houston; William E. Hall, LaPorte, both of Tex.; Howard H. Morgan, Jr., Monroeville Borough, and Arthur R. Snyder, Export Borough, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Sep. 1, 1981, Ser. No. 298,702

Int. Cl.³ C07C *7/148*; B01D *53/36*

U.S. Cl. 585—850 **9 Claims**

1. Method of removing carbonyl sulfide from propylene comprising passing the propylene containing carbonyl sulfide over a catalyst of platinum sulfide on alumina in the presence of water to hydrolyze the COS to H_2S and CO_2.

4,455,447

PROCESS FOR UPGRADING HYDROCARBON STREAMS COMPRISING CONJUGATED DIOLEFINS

Antonius A. Broekhuis, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 28, 1983, Ser. No. 479,289

Claims priority, application Netherlands, May 18, 1982, 8214486

Int. Cl.³ C07C *7/10*

U.S. Cl. 585—853 **11 Claims**

1. Process for the upgrading of a hydrocarbon mixture containing conjugated diolefin which comprises contacting said mixture with a dispersion of at least one metal selected from alkali and alkaline earth metals in the presence of an aliphatic amine according to the general formula

$$R^1—NH_2 \quad (I)$$

wherein R^1 represents an alkyl group of up to 16 carbon atoms or a group $(CR^2R^3)_nNR^4R^5$ wherein R^2, R^3 and R^4, which may be the same or different, each represent a hydrogen atom or a lower alkyl group, n represents an integer up to 8 and R^5 represents a hydrogen atom or a group $(CR^2R^3)_nNR^4H$ wherein R^2, R^3, R^4 and n are as defined hereinbefore.

4,455,448

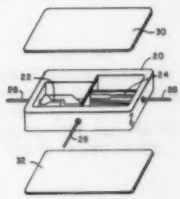
HOUSING FOR MICROWAVE ELECTRONIC DEVICES

Robert W. Bertolina, Foster City, Calif., assignor to Watkins-Johnson Company, Palo Alto, Calif.

Filed Dec. 2, 1981, Ser. No. 326,757

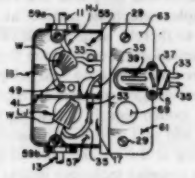
Int. Cl.³ H05K *9/00*

U.S. Cl. 174—35 R **6 Claims**



1. For use in microwave applications, a housing comprising a molded plastic body having peripheral walls, a plurality of holes extending through walls of said body, an electrically conductive material plated on said walls and in said holes, a bottom planar member having at least one electrically conductive surface, a top planar member having at least one electrically conductive surface, said top and bottom planar members mating with said body and defining a housing cavity, and coaxial signal conductive lines extending through said holes.

4,455,449
UNIVERSAL HIGH/LOW VOLTAGE KIT FOR JUNCTION WIRING BOX
Robert D. Rendel, St. Charles County, Mo., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Mar. 15, 1982, Ser. No. 358,253
Int. Cl.³ H02G *3/08*
U.S. Cl. 174—53 **5 Claims**



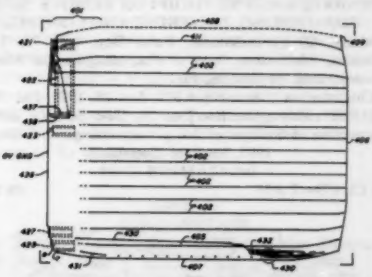
3. In an electrical junction box adapted to receive both high and low voltage wiring from respective high and low voltage sources and high and low voltage wiring from an appliance, to permit the connection of the high voltage wiring from said high voltage source to the high voltage appliance wiring, and to permit the connection of said low voltage wiring from said low voltage source to the low voltage appliance wiring, said junction box having a bottom, sides extending up from the bottom, and an open front, said sides and bottom of said junction box having a plurality of knock-out plates therein so as to permit entry into said junction box of said high and low voltage wirings from said high and low voltage sources via openings when selected of said knock-out plates are removed, a partition within said junction box so as to divide the interior of said junction box into a high voltage compartment and a low voltage compartment, and a cover for closing said open front of said junction box, wherein the improvement comprises: said cover including a first cover plate securable to said box thereby to overlie a portion of said high voltage compartment and of said low voltage compartment, said first cover plate having at least one knock-out plate therein so as to permit entry of said appliance high and low voltage wiring into said high voltage compartment through a common cable when one of said knock-out plates is removed, and a second cover plate removably installable on the box after said wiring connections have been made within said junction box thereby to permit inspections of said wiring connections without disturbing the wiring within said junction box .

4,455,450
DIGITIZING TABLET
George D. Margolin, 1815 Sherington Pl., Newport Beach, Calif. 92663
Filed Sep. 25, 1981, Ser. No. 305,739
Int. Cl.³ G08C *21/00*
U.S. Cl. 178—18 **7 Claims**

1. An arrangement for generating an electrical representation of the location of an implement on a writing area, said arrangement comprising first and second sheets of insulating material, at least one of said sheets being deformable, said first and second sheets including first and second electrical means respectively, for generating the X and Y coordinates of said location when said sheets are urged into contact with one another by said implement, said sheets being sealed to one another in a manner to insulate said first and second electrical means from one another and to form a sealed pocket therebetween, said pocket containing an insulating fluid or gaseous

medium under pressure for maintaining said sheets in a spaced apart position.

4,455,451
DIGITIZER TABLET
John S. Kriz, Kensington, Md., assignor to Perq Systems Corporation, Pittsburgh, Pa.
Filed Jul. 12, 1982, Ser. No. 397,175
Int. Cl.³ G08C *21/00*
U.S. Cl. 178—18 **27 Claims**



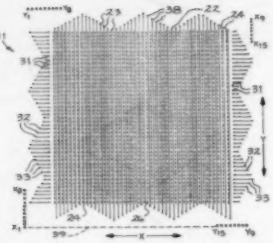
1. A tablet providing coordinate location, comprising:
an array of conductors disposed in a grid over the tablet area to create a first field when each said conductor is energized;
means to selectively energize each conductor of said array of conductors;
a sensor providing an output signal related to the first field proximate to said sensor; and
decoder means responsive to said means to selectively energize and to said sensor signal output, wherein said decoder means provides a location signal representative of the coordinate location of said sensor relative to said array and wherein said array is predistorted to provide uniform correspondence between said location signal and the location of said sensor over the entire area of said grid.

4,455,452

TOUCH ACTIVATED CONTROLLER FOR GENERATING X-Y OUTPUT INFORMATION

David L. Schuyler, Fremont, Calif., assignor to Touch Activated Switch Arrays, Inc., Santa Clara, Calif.

Filed Sep. 13, 1982, Ser. No. 417,540
Int. Cl.³ G08C 21/00
U.S. Cl. 178—18 6 Claims



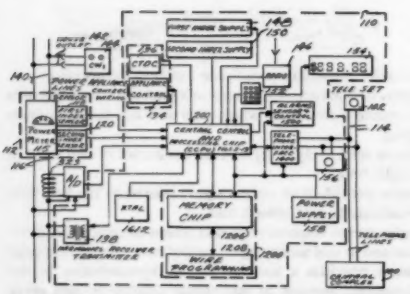
1. In a touch activated controller for generating signals representative of displacement of a person's finger movement thereon along each of two axes and adapted to control apparatus responsive to said generated signals, said controller comprising a supporting layer of insulating material, a first series of elongate conductive sense elements distributed in closely spaced relation across said layer, means forming leads coupled to said elements for carrying signals thereon representative of movement of a person's finger across said elements, a second series of elongate conductive sense elements distributed across said layer and disposed between adjacent pairs of said first series, the elements of said second series being divided into a series of increments distributed lengthwise thereof, and means forming conductors coupled to adjacent increments from pairs of said second series of elements for carrying signals thereon representative of movement of a person's finger along said elements of said second series.

4,455,453

APPARATUS AND METHOD FOR REMOTE SENSOR MONITORING, METERING AND CONTROL

Theodoros G. Parasekvakos, Palm Bay, and W. Thomas Bushma, Melbourne, both of Fla., assignors to Metretek, Incorporated, Melbourne, Fla.

Continuation of Ser. No. 6,871, Jan. 26, 1979, Pat. No. 4,241,237. This application Dec. 23, 1980, Ser. No. 219,863
The portion of the term of this patent subsequent to Dec. 23, 1997, has been disclaimed.
Int. Cl.³ H04M 11/04
U.S. Cl. 179—2 AM 89 Claims



1. A method for monitoring anc controlling a remote unit adapted for communicating data to a central complex through a non-dedicated telephone line, said central complex having a telephone number assigned thereto, said method comprising the steps of:

deriving and storing information within said remote unit;

selectively controlling, responsive to signals indicative of real time occurrence, at least a portion of said remote unit so as to selectively seize said telephone line at a predetermined real time;

generating signals onto said telephone line representative of said central complex telephone number at said predetermined real time to thereby address said central complex and effect a communication connection therewith;

generating at the remote unit onto said telephone line, responsive to acknowledgement signals received from said central complex, coded signals indicating the identity of said remote unit and said stored information; and

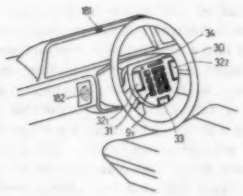
receiving and storing at the remote unit subsequent signals from said central complex including indicia of the current real time and of the next predetermined real time at which the foregoing steps are to be repeated.

4,455,454

TELEPHONE TRANSMISSION SYSTEM ON A ROAD-VEHICLE

Kazuyuki Umebayashi, Tokyo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 10, 1982, Ser. No. 440,660
Claims priority, application Japan, Nov. 25, 1981, 56-188723
Int. Cl.³ H04M 1/23
U.S. Cl. 179—2 E 16 Claims



1. A telephone transmission system on a roadvehicle comprising:

a dialling control board supporting mechanism mounted on a steering wheel adapted to support a dialling control board in a stationary state relative to the road vehicle irrespective of a rotation of said steering wheel;

a plurality of input key switches including ten key switches and a hook switch, a moudlation circuit and a transmitting control electronic device which are incorporated in said dialling control board;

an electric controller disposed on the road-vehicle at a position mechanically remote from said steering wheel, including a demodulation circuit and a receiving control electronic device and connected to a mobile telephony device on the road-vehicle; and an electric coupling means adapted to electrically couple said control board and said electric controller.

4,455,455

INTERNODAL CONFERENCE CALL ADMINISTRATOR

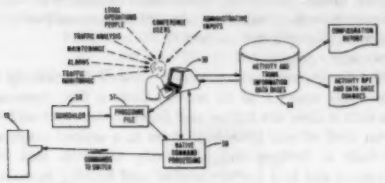
Richard E. Little, Dedham, Mass., assignor to GTE Business Communication Systems Inc., Waltham, Mass.

Filed Dec. 1, 1982, Ser. No. 445,861
Int. Cl.³ H04M 3/56, 15/32
U.S. Cl. 179—7.1 R 20 Claims

7. A conference call administrator for arranging conference call bridges between two or more tandem node switches, said administrator comprised of:

a computerized procedure file;

means for entering conference call schedules in said procedure file; and



a command processor for automatically downloading the next days conference call schedule to the tandem node switches.

4,455,456

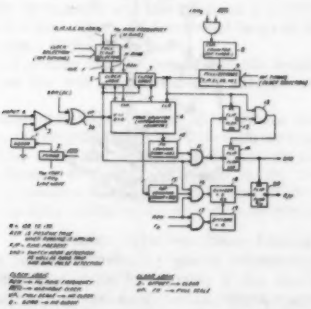
DIGITAL SUPERVISORY CIRCUIT FOR A TELEPHONE SYSTEM

William T. Cochran, Milford, Conn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 26, 1982, Ser. No. 371,846

Int. Cl.³ H04M 3/22

U.S. Cl. 179—18 FA **28 Claims**



1. A digital supervisory circuit for a telephone system comprising:

first means responsive to an input signal representing at least one of ring trip, ring present, on-hook, off-hook and dial pulses to provide an output signal indicating the difference in time said input signal is above and below a predetermined reference potential;

second means coupled to said first means to digitally integrate said output signal;

third means coupled to said first means and said second means, said third means having a first predetermined digital threshold to provide a ring present supervisory signal when said first threshold is exceeded;

fourth means coupled to said first means and said second means, said fourth means having a second predetermined digital threshold to provide a switch hook detection supervisory signal when said second threshold is exceeded; and

fifth means coupled to said second means, said third means and said fourth means to prevent response of said second means and said fourth means to line transients.

4,455,457

ADJUSTER MEANS FOR HEADSET

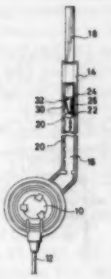
Jingu Akira, Gunma, Japan, assignor to Tokumi Denshi Kogyo Kabushiki Kaisha, Gunma, Japan

Filed Jun. 1, 1982, Ser. No. 384,124

Claims priority, application Japan, Oct. 20, 1981, 56-155553[U]

Int. Cl.³ H04R 1/10

U.S. Cl. 179—156 R **4 Claims**



1. An adjuster means for a headset comprising an arcuate head band made of an elastic material and a pair of flattened tubular bodies each of which is connected at its one end to a corresponding earphone unit and has a passageway formed centrally therein, wherein both ends of said head band are inserted into said passageways in said respective flattened tubular bodies to integrally join said head band and said flattened tubular bodies, an elastic projecting member secured in position close to each end of said head band and a plurality of recessions or dents formed regularly at given intervals along an inner wall of each said passageway, said recessions being designed so that said elastic projecting member may be elastically fitted in any one of said recessions, thereby allowing telescopically adjustable secure positioning of said head band in said flattened tubular bodies, the elastic projecting members being bent in two portions, with only a first one of said portions being entirely housed and fixed in position in a cutout in the head band, said cutout defining an opening along an edge of said head band in facing relationship to said inner wall of said passageway, while a second elastic one of said portions is cantilevered outwardly from said recess towared said inner wall and has a lobe-like arched protuberance near its free end, said protuberance being arranged to project out or retract from said edge of the head band.

4,455,458

PULSE SWITCH

Akira Oyama, Miyagi, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Aug. 20, 1982, Ser. No. 409,871

Claims priority, application Japan, Aug. 20, 1981, 56-123873[U]

Int. Cl.³ H01H 9/00

U.S. Cl. 200—1 B **3 Claims**

1. A pulse switch comprising:

a case including a pair of opposing wall portions defining an operating space therebetween,

a shaft extending into the operating space and rotatably supported by the wall portions,

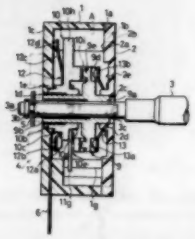
a common contact and at least one transfer contact disposed on an inner surface of one of said wall portions,

a main disc and an auxiliary disc mounted in said operating space, said main disc being located near the wall portion having the contacts disposed thereon, said auxiliary disc being located near the other wall portion, said main disc being adapted to rotate independently of said shaft and

being normally held in its neutral position by a return spring, said auxiliary disc being adapted to rotate along with said shaft,

a common contactor and a transfer contactor fixed to said main disc, said common contactor being normally held in contact with said common contact, said transfer contactor being adapted to be brought into contact with said transfer contact when said main disc has rotated a predetermined angle,

a plurality of radiating teeth formed on a side of said main disc facing said auxiliary disc,



crests provided on a side of said auxiliary disc facing said main disc, said crests being adapted to mesh with said teeth,

a plurality of radiating teeth formed on the opposite side of said auxiliary disc and having the same shape as said teeth of said main disc, and

pressing projections disposed in said case and adapted to mesh with said teeth of said auxiliary disc to press said auxiliary disc against the main disc.

4,455,459

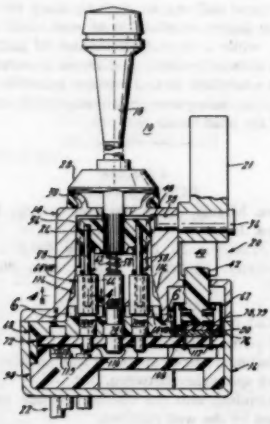
FOUR-WAY ELECTRICAL SWITCH

Robert J. Smith, Farmington Hills, Mich., assignor to Chivas Products Ltd., Sterling Heights, Mich.

Filed Nov. 23, 1981, Ser. No. 324,078

Int. Cl.³ H01H *9/00, 19/00, 25/00*

U.S. Cl. 200—5 R **36 Claims**



1. A switch assembly for connecting an electrically-operated device to a supply of electrical power comprising:

a housing for said switch including at least one conductive portion forming both interior and exterior walls of said switch assembly, said exterior wall of said housing portion being adapted to be connected to said power supply and said interior wall of said one portion being configured so that said interior wall of said one portion functions as a conductive contact for said switch;

a fixed contact disposed within said interior wall of said housing portion and being adapted to be connected to said electrically-operated device;

a movable contact; and

means for moving said movable contact for causing said movable contact to be moved from a first position in which it does not bridge said fixed contact and said interior wall of said housing portion to a second position in which it bridges and electically connects said fixed contact and said interior wall of said housing portion for connecting said electrically-operated device to said power supply.

4,455,460

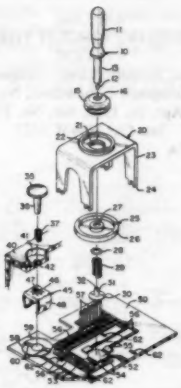
JOYSTICK SWITCH

Edward D. Bunnell, Palm Harbor, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 2, 1982, Ser. No. 394,944

Int. Cl.³ H01H *25/04*

U.S. Cl. 200—6 A **5 Claims**



1. A joystick switch assembly comprising:

a board member having a conductive ground pad situated thereon and a plurality of conductive signal contacts thereon situated radially about said ground pad and electrically isolated therefrom;

a support member having an aperture therein, said support member being fixed relative to said board member, said aperture being situated about said ground pad;

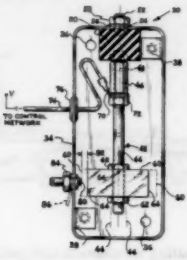
an actuating assembly comprising a shaft, an elastomeric member, a spring member, and a contact plate, said shaft being mounted in said elastomeric member which in turn is mounted in said aperture of said support means, said shaft having a handle remote from said board and an inner end proximate to said board, said elastomeric member resiliently biasing said shaft to a normal position with respect to said ground pad, said contact plate lying against said ground pad and having a tubular stand-off thereon normal to said plate, said tubular stand-off fitting loosely over said inner end of said shaft said spring member surrounding said shaft between said elastomeric member and said contact plate, said spring member urging said contact plate against said ground pad, whereby,

lateral movement of said handle causes said shaft to pivot in said elastomeric member which causes said contact plate to slide across said ground pad until it engages said ground pad and at least one of said signal contacts.

4,455,461
ADJUSTABLE IMBALANCE DETECTOR FOR A CENTRIFUGE

Stephen A. Maguire, Waterbury, Conn., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.

Filed Sep. 29, 1982, Ser. No. 427,419
Int. Cl.³ H01H *35/14*
U.S. Cl. 200—61.45 R 5 Claims



1. An imbalance detector for a centrifuge having a casing in which a rotor is mounted for rotational movement, the rotor having a critical speed associated therewith, the detector comprising:

a housing mounted to the casing;

a pendulum arm attached to the housing, the arm having a plumb of a predetermined weight disposed thereon a predetermined distance from the attachment of the arm to the housing, the weight of the plumb, the stiffness of the arm and the distance from the point of attachment being adjustable to tune the arm and impart to it a critical frequency that lies within a predetermined range of the critical frequency of the rotor; and

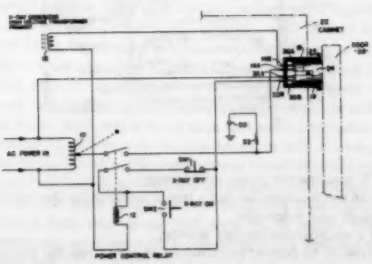
an electrical contact element mounted to the housing and spaced on the arm a predetermined distance from the plumb,

the pendulum arm responding to an imbalance force imposed by the rotor and transmitted through the casing and the housing to the arm by swinging through the predetermined distance to touch the plumb to the electrical contact to generate an electrical safety signal if the magnitude of the rotor imbalance force exceeds a predetermined threshold.

4,455,462
ARC PROOF DUAL INTERLOCK SAFETY SWITCH

Victor E. DeLucia, 11846 Mississippi Ave., Los Angeles, Calif. 90025

Filed Jan. 25, 1982, Ser. No. 342,520
Int. Cl.³ H01H *3/16*
U.S. Cl. 200—61.62 4 Claims

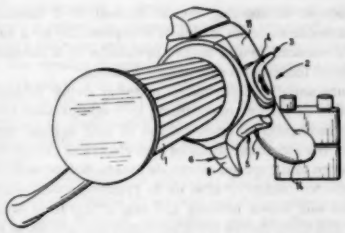


1. A dual interlock switch assembly for use in a circuit connecting a source of electrical energy to the energizing circuit of an X-ray unit, and the like, which unit includes a cabinet and an access door and in which the switching circuit serves to prevent energization of the unit when the access door is open, the assembly including: a socket mounted on the cabinet having a closed end and an open end; a first pair of electric contacts mounted in the socket each in the form of a spring-loaded pin extending through the closed end longitudinally into the socket; a second pair of electric contacts mounted in the socket each in the form of a spring-loaded pin extending longitudinally through the closed end; a plug mounted on the access door removably received in the open end of the socket and engaging the spring-loaded pins to interconnect said first pair of contacts and subsequently to interconnect said second pair of contacts as the door is closed, and disengaging with said pins to break contact with said second pair of contacts and subsequently to break contact with said first pair of contacts as the door is opened.

4,455,463
SWITCH ARRANGEMENT FOR MOTORCYCLES

Ekkehard Röhl, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 17, 1982, Ser. No. 408,947
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1981, 3132311
Int. Cl.³ H01H *9/06*
U.S. Cl. 200—61.85 11 Claims



1. A switch arrangement of motorcycles, comprising a rocker-type switch which is located on a handlebar near a handlebar grip and includes an actuating rocker, said actuating rocker being adjustable into several operating positions within an adjustment plane substantially normal to the handlebar, and two single-action switches, each of said single-action switches having a switching member and one operating position, and said single-action switches being located at least approximately in the adjustment plane of said rocker-type switch and being adjustable also substantially in said adjustment plane.

4,455,464
ALARM SYSTEM SENSING AND TRIGGERING APPARATUS

Roger J. Leyden, Willow Springs, Ill., assignor to Se-Kure Controls, Inc., Chicago, Ill.

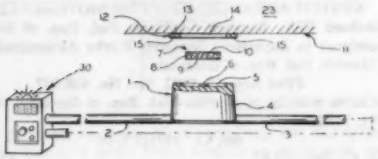
Filed Jul. 27, 1982, Ser. No. 402,372
Int. Cl.³ G08B *21/00*; H01H *3/02*
U.S. Cl. 200—61.93 10 Claims

1. An improved alarm system sensing and triggering apparatus for remote detection of interruptions or alterations in an otherwise closed electrical circuit, of the type including sensor housing means which are attachable to an article, alarm system integration means emanating from a first end of said sensor housing means for electrically connecting and integrating same into an electronic circuit embodying said alarm system, exposed electrode means electrically connected to said integration means and emanating from a second end of said sensor housing, current conducting means with a first and second side

which is attachable to said article along said first side and operably communicating with said exposed electrode means along its said second side to alternatively close and open an electrical circuit defined therebetween when said conducting means is operably interposed between said exposed electrode means and said article, whereby disturbance of the position of said current conducting means affects said electrical circuit to activate said alarm system, said sensor attachment means for attaching the periphery of said sensor housing to said article with said current conducting means operably interposed between said exposed electrode means and said article, said improvement comprising;

recessed cavity means at said first end of said sensor housing for operably receipt of said current conducting means,

said exposed electrode means being positioned in the lower portion of said recessed cavity means and extending upwardly thereinto;



said current conducting means formed of a substantially deformable material which is compressable to a substantially reduced height upon application of a substantially minimal force upon said sensor housing;

said substantially deformable material being additionally capable of further maintaining said compressed shape at least momentarily upon release of said applied force to affect the electrical status of said electrical circuit formed between said exposed electrode means, before said current conductor means returns to its precompressed shape between said sensor housing and said article to in turn open said electrical circuit towards triggering said alarm system upon the mere tampering with said sensing and triggering apparatus without the need for outright detachment of said sensor housing means from said sensor attachment means and in turn said article.

4,455,465

TREADLE ASSEMBLY WITH PLURAL REPLACEABLE TREADLE SWITCHES

Donald Habeger, New City, N.Y., assignor to Automatic Toll Systems, Inc., Mount Vernon, N.Y.

Filed Jan. 10, 1983, Ser. No. 457,062
Int. Cl.³ H01H *3/02*
U.S. Cl. 200—86 R **11 Claims**

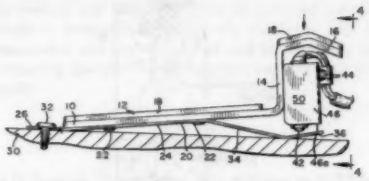
1. A switch treadle assembly comprising a tray adapted to be disposed in a roadway; a plurality of elongated, unitary treadle switches of substantially straight-sided cross section each containing a pair of contacts to close under weight of a vehicle passing over the associated treadle switch and to open when not subject to said weight, said elongated treadle switches being disposed spaced apart and parallel to each other within said tray; at least one retaining bar each disposed between successive ones of said elongated treadle switches and shaped to retain the same within said tray; and fastening means for releasably holding said at least one retaining bar, and hence said elongated treadle switches, within said tray.

4,455,466

SWITCH ACTUATING MECHANISM

Dallas W. Wilson, 2015 NW. 23rd Ave., Portland, Oreg. 97210

Filed Apr. 21, 1982, Ser. No. 370,178
Int. Cl.³ H01H *3/14*
U.S. Cl. 200—86.5 **9 Claims**



1. A switch actuating mechanism comprising

(a) an elongated rigid foot pedal having forward and rearward ends,

(b) an elongated leaf spring secured longitudinally to the bottom of said foot pedal,

(c) said spring having a downwardly disposed offset portion adjacent the forward end of said foot pedal for resiliently supporting the forward end of said foot pedal off a supporting surface,

(d) and a switch supported on said foot pedal adjacent said forward end and having a movable contact plunger with a pair of operative positions,

(e) said offset portion having a free end extending under the plunger of said switch,

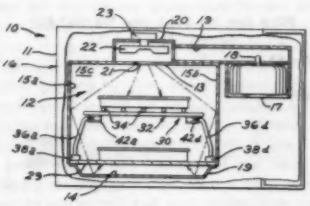
(f) said switch being positioned such that in the rest position of said foot pedal, its plunger is in one of its operative positions but upon downward depressed movement of said foot pedal under operator control, said plunger engages said free end of said leaf spring for movement to its other operative position.

4,455,467

METAL RACK FOR MICROWAVE OVEN

Raymond L. Dills, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Sep. 21, 1981, Ser. No. 304,278
Int. Cl.³ H05B *9/06*
U.S. Cl. 219—10.55 E **7 Claims**



1. A microwave oven, comprising:

(a) an oven cavity having a top, a rectangular shaped bottom shelf and sidewalls;

(b) a microwave energy source;

(c) means to deliver microwave energy from the microwave energy source to the cavity through the top thereof; and

(d) a rack including:

a metal, rectangular framework of parallel bars, said rack being spaced inwardly of all sides of the cavity,

legs depending from the corners of the framework, said legs each having a terminal end and extending downwardly and diverging outwardly from the framework, said legs having low loss dielectric insulating material on the terminal ends thereof,

the legs cooperating with the oven cavity bottom shelf and sidewalls such that the framework of the rack is centered relative to the cavity sidewalls and electrically insulated therefrom.

4,455,468

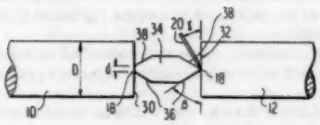
PROCESS AND DEVICE FOR SPLICING METAL SHAFTS BY ARC WELDING AND SPLICED SHAFT MADE BY SUCH PROCESS

J. Glenn Satterthwaite, 1538 Lea View Ave., Norfolk, Va. 23503

Filed Jul. 10, 1981, Ser. No. 282,297

Int. Cl.³ B23K *9/00, 31/08*

U.S. Cl. 219—58 **22 Claims**



1. A process of splicing two metal shafts having solid cylindrical cross-sections by means of electric arc welding in which a consumable electrode is used both to pass current to the welding site and to provide filler material for the welded joint, said process comprising the steps of:

providing each of said shafts with an as-cut end surface transverse to its axis;

placing between said as-cut end surfaces a metal insert having a solid cylindrical cross-section, an axis and opposite ends, said insert being tapered toward each of said opposite ends by at least one surface at each of said opposite ends, said at least one surface being set at an angle to said axis of said insert to define at each said opposite end a contact surface, each said contact surface abutting one of said as-cut end surfaces, said opposite ends of said insert each being tapered by said at least one surface at angles which allow insertion of a consumable arc welding electrode into the convergent space defined between said as-cut end surfaces of said shafts and said opposite ends of said insert, said angles being such that said consumable arc welding electrode may be positioned in said convergent space at locations sufficiently spaced from both said opposite ends of said insert and said as-cut end surfaces and also sufficiently close to the point of abutment of said contact surfaces with said as-cut end surfaces, to ensure proper electric arc welding with a consumable arc welding electrode; and

joining said shafts and said insert to provide a single shaft by electric arc welding in which a consumable electrode is inserted into said convergent space.

4,455,469

METHOD AND APPARATUS FOR EDM WITH LATERALLY VIBRATED TOOL ELECTRODE

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

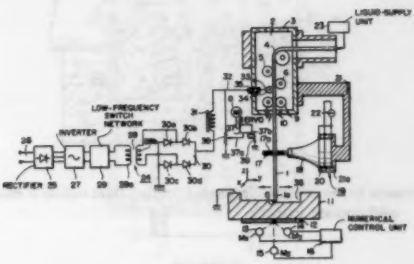
Filed Oct. 2, 1981, Ser. No. 307,949

Claims priority, application Japan, Oct. 8, 1980, 55-139867

The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.

Int. Cl.³ B23P *1/12*

U.S. Cl. 219—69 M **26 Claims**



1. A method of electroerosively machining a three-dimensional cavity in a workpiece, comprising the steps of:

axially juxtaposing a slender tool electrode of which the shape is generally independent of the shape of the desired cavity with the workpiece to define between a tip portion of the slender electrode and the workpiece a machining gap flooded with a machining liquid;

laterally oscillating said slender electrode to cause said tip portion to oscillatorily move with a small amplitude in a plane substantially normal to the axis of said slender electrode;

effecting a succession of electrical discharges between said laterally oscillating tip portion and the workpiece through said liquid flooded machining gap to electroerosively remove material from the workpiece; and

effecting a three-dimensional relative displacement of the axis of the laterally oscillating slender electrode and the workpiece to cause said oscillatorily moving tip portion to sweep in a scanning manner three-dimensionally over the workpiece while maintaining said machining gap therebetween substantially constant in size.

4,455,470

PLASMA SPRAY GUN NOZZLE AND COOLANT DEIONIZER

John F. Klein, Port Washington; Chandra K. Bhansali, Lindenhurst; Thomas J. Fox, Setauket; Richard T. Smyth, Huntington, and Raymond A. Zatorski, Jericho, all of N.Y., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Aug. 14, 1981, Ser. No. 292,759

Int. Cl.³ B23K *9/00*

U.S. Cl. 219—121 PP **9 Claims**

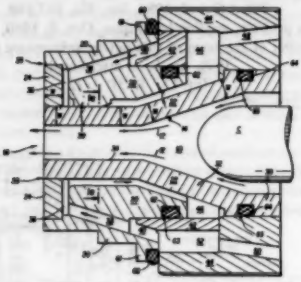
1. A plasma flame spray gun system comprising, in combination:

an inner gun nozzle member made of an impervious metal and defining a passage for channeling gases through an electrical arc formed therein, said inner gun nozzle having a uniform wall thickness in the region of the arc in the range of between 1.9 mm and 2.8 mm;

an outer gun nozzle member at least partially surrounding said inner member and forming a substantially single coolant passage between said outer member and said inner member in substantially the entire region radially outward of the area where said electrical arc is formed, said coolant passage having a uniform distance T between said outer

gun nozzle member and said inner gun nozzle member of between about 0.76 mm to 1.27 mm;

means to force a cooling fluid through said coolant passage; and



means to remove ions from said cooling fluid before it enters said coolant passage.

4,455,471

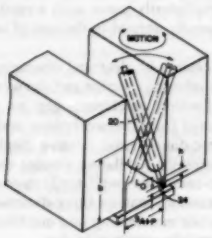
ARC WELDING METHOD AND ELECTRODE FOR NARROW GROOVE WELDING

Gunes M. Ecer, Irvine, Calif.; Israel Stol, Monroeville, and Gerald G. Lessmann, Pleasant Hills, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 18, 1982, Ser. No. 340,431

Int. Cl.³ B23K *9/30*

U.S. Cl. 219—125.12 **6 Claims**



1. An electric arc welding method in which molten metal is deposited along a welding line, comprising the steps of:

causing an arc to be formed between a non-consumable electrode having a tip which is shaped to a point, radially displaced from the central axis of said electrode, and a metal workpiece;

angularly oscillating said non-consumable electrode, thereby causing an arc sweep width greater than an arc sweep width which would occur with a non-consumable electrode having a centered tip; and

simultaneously oscillating said non-consumable electrode about a pivot point located along said non-consumable electrode, thereby providing pivotal oscillation in a direction substantially perpendicular to said welding line.

4,455,472

BED WARMER

Arlen R. Moss, 2101 Laverne Dr., Huntsville, Ala. 35810

Filed Jan. 12, 1981, Ser. No. 224,165

Int. Cl.³ H05B *3/54*

U.S. Cl. 219—217 **1 Claim**

1. A bed heater comprising:

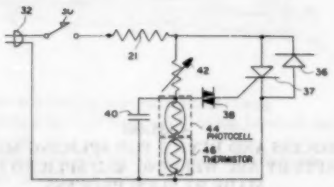
a first perforated, flat, non-metallic, plate member having a minimum area of 1.5 square feet;

support legs attached to said first plate and arranged to support said first plate above and parallel to a supporting floor beneath a bed;

a second perforated, flat, non-metallic, plate member, and means for supporting it parallel to and spaced above said first plate member, and at least a portion of the periphery of the heater between plate members is open;

an insulated cover type resistance heating fuse wire extending in a series of spaced loops over the surface of said first plate and between said first and second plates;

power coupling means for coupling power from an A.C. source through said resistance heating fuse wire, and including means inversely proportionally responsive to



the intensity of ambient light and temperature for varying power flow to said fuse wire, and comprising:

an SCR having a control terminal, and power controlled terminals connected in series with said resistance heating fuse wire and poled to pass current in one direction when turned on responsive to a signal applied to its controlled terminal;

a diode connected across said controlled terminals of said SCR and poled to pass current opposite to said direction; and

control means for applying a turn-on signal to said control signal of said SCR comprising a resistance-capacitance circuit powered by the A.C. source, and wherein the resistance component of said resistance-capacitance circuit comprises a temperature responsive resistor and a light responsive resistor.

4,455,473

HEAT DISSIPATOR FOR THE ELECTRONIC CIRCUIT OF A LAUNDRY IRON

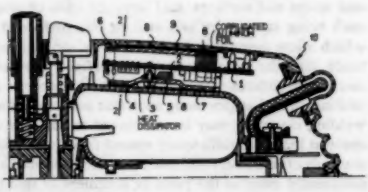
Pierre Schwob, Lyons, France, assignor to SEB S.A., Selongey, France

Filed Mar. 23, 1982, Ser. No. 361,080

Claims priority, application Luxembourg, Apr. 10, 1981, 83292

Int. Cl.³ H05B *1/02;* **D06F** *75/34;* **F28F** *1/00*

U.S. Cl. 219—245 **4 Claims**



1. A laundry iron, comprising an electronic regulating circuit having at least one heat-generating element, said electronic regulating circuit being contained in a metallic tubular casing housed within a hollow handle of said laundry iron, the interior of said handle being similarly shaped as the exterior of

the tubular casing, and a thermal bond between said casing and said handle.

4,455,474

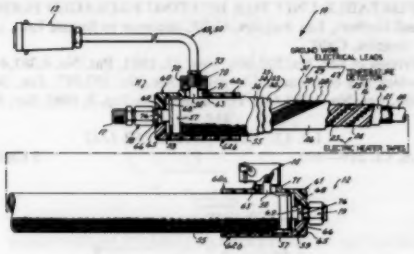
THERMALLY INSULATED ELECTRICALLY HEATED HOSE FOR TRANSMITTING HOT LIQUIDS

Calvin R. Jameson, Atlanta, and Robert G. Baker, Buford, both of Ga., assignors to Nordson Corporation, Amherst, Ohio

Filed Nov. 27, 1981, Ser. No. 325,389

Int. Cl.³ H05B *3/58;* **F16L** *11/12, 53/00;* **B67D** *5/62*

U.S. Cl. 219—301 **17 Claims**



1. A flexible heated hose of substantially uniform construction throughout its length for transmitting hot liquid material comprising,

a flexible polymeric tube contained within a braided stainless steel covering, said tube having metallic hydraulic fittings sealingly attached to its opposite ends,

a first layer of woven fiberglass helically wound around said braided stainless steel covering, said first layer being coated on its opposite sides with a thermosetting adhesive,

at least one electrical heating line helically wound around and adhered to said first layer of woven fiberglass,

electrical leads for supplying electrical power to said at least one electrical heating line,

temperature detecting means adhesively secured to said first layer of woven fiberglass, and electrical leads helically wrapped around said first layer of woven fiberglass and extending from said temperature detecting means to one end of said hose,

a second layer of woven fiberglass helically wound over said at least one electrical heating line, said temperature detecting means, and said temperature detecting means leads, said second layer of woven fiberglass being coated on the inside surface with a thermosetting adhesive so as to secure said at least one electrical heating line, temperature detecting means and temperature detecting means leads against movement relative to said tube,

a third layer of fiberglass paper helically wound over said second layer, said third layer acting as a thermal barrier to heat loss from said hose,

at least two electrical leads helically wrapped around said third layer of fiberglass paper and extending for the length of said hose, said at least two electrical leads being operative to transmit electrical power for the length of said hose,

a fourth layer of at least one thickness of fiberglass paper helically wrapped over said at least two electrical leads, said fourth layer acting as a thermal barrier to heat loss from said hose,

a fifth layer of at least one thickness of polyester felt helically wrapped over said fourth layer,

a sixth layer of vinyl electrical tape helically wrapped over said fifth layer, said sixth layer providing a moisture barrier for said hose, and

a braided polyester cover over said sixth layer.

4,455,475

AUTOMATIC DEVICE FOR QUICK HEATING OF LIQUIDS, PARTICULARLY WATER

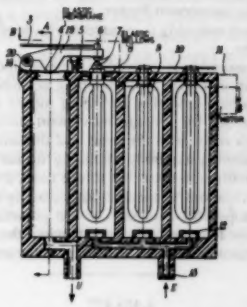
Aldo Giorgetti, Rome, Italy, assignor to Pier Francesco Talenti, Potomac, Md.

Filed Aug. 4, 1982, Ser. No. 405,130

Claims priority, application Italy, Sep. 14, 1981, 49287 A/81

Int. Cl.³ H05B *3/78;* **F24H** *1/10*

U.S. Cl. 219—306 **7 Claims**



1. Automatic device for quick heating of liquids, comprising at least two containers having at their lower portion ducts for introducing cold liquid and each container being provided with heating means and outlet means; a tank into which hot liquid is alternatingly supplied from said outlet means of the said containers; control means for actuating said outlets of said containers; means sensitive to the pressure in said tank for connecting or disconnecting said heating means and said control means; and means sensitive to the level of liquid in one of the containers for disconnecting said heating means and said control means of the outlets.

4,455,476

ELECTRIC KETTLE WITH INDEPENDENTLY DETACHABLE SUBASSEMBLIES

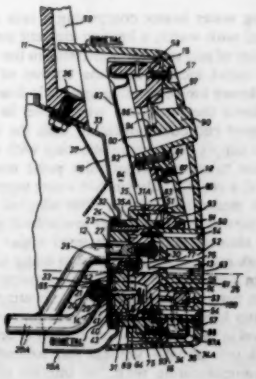
Denis H. Haden, Staffordshire, England, assignor to D. H. Haden Limited, United Kingdom

Filed Nov. 20, 1981, Ser. No. 323,627

Claims priority, application United Kingdom, Dec. 19, 1980, 8040831; Jun. 27, 1981, 8119893

Int. Cl.³ F27D *11/02;* **H05B** *1/02, 3/82*

U.S. Cl. 219—328 **8 Claims**



1. A vessel for heating liquids, comprising:

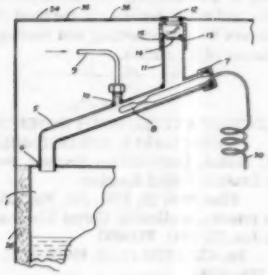
(a) a wall, an immersion heater, and switch means,
(b) the immersion heater having a head secured to said wall,
(c) the switch means comprising a first assembly and a second assembly, the first assembly including a steam responsive mechanism mountd on a body means and the second assembly including a dry overload responsive actuating mechanism, a switch actuating member and a carrier,
(d) the carrier carries live and neutral electrical supply connectors, switch contacts, and conductors to connect electrically the connectors and the switch contacts with cold tails of the immersion heater,
(e) the second assembly is secured to the head of the immersion heater,
(f) the first assembly is secured to the head independently of the second assembly by a clamping assembly,
(g) the clamping assembly including means to support the first assembly for arcuate movement about a predetermined axis relative to the head and the second assembly,
(h) said clamping assembly including means to secure the first assembly non-rotatably to the head, and
(i) the steam responsive mechanism including a movable part which cooperates with said switch actuating member to be effective to open said contacts when the steam responsive mechanism responds to being subjected to steam.

4,455,477

ELECTRIC BOILING WATER HEATER

Raymond D. Massey, Cambridge Park, and Leonard Newsam, Dulwich Hill, both of Australia, assignors to Zip Heaters (Aust) Pty. Limited, Marrickville, Australia

Continuation-in-part of Ser. No. 140,927, Apr. 16, 1980, abandoned. This application Jul. 20, 1982, Ser. No. 400,174
Int. Cl.³ H05B *1/02*; F24H *1/20*; A47J *27/21*
U.S. Cl. 219—328 **8 Claims**



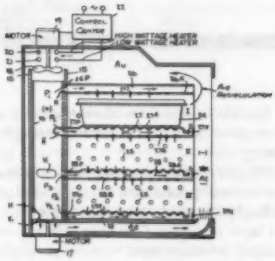
1. A boiling water heater comprising a tank adapted to be partially filled with water, a heating element positioned adjacent the bottom of said tank for immersion in the water therein, a hot water outlet located near the bottom of said tank, an inclined condenser tube extending upwardly from the tank and at a point above the maximum water level in the tank and having its lower end communicating with the interior of the tank, a water supply pipe communicating with the interior of said condenser tube at a water inlet point intermediate the length thereof, a control valve in said water supply pipe, water level control means including a float adapted to traverse a vertical rod between a water level lower limit position above said heating element and a water level upper limit position below the tank roof, said control means being actuable by the water level in said tank and arranged to operate said control valve so as to permit energization of the heating element only when the water level is above said lower limit and to maintain the water level in said tank between the upper and lower limits during use, a substantially vertical flue extending upwardly from, and communicating with, the interior of said inclined condenser tube at a location above said water inlet point, and elongated temperature sensing means extending into said inclined condenser tube from the upper end of the condenser tube and having its lower end disposed adjacent said water inlet point and below the entry point of said flue and said temperature sensing means being operable in co-operation with an electrical thermostat to control said heating element and said control valve so that said heating element is rendered ineffective and said valve is operable by said water level control means only in response to the temperature in said condenser tube being above said limit when the water level in the tank is above said lower limit.

4,455,478

PORTABLE UNIT FOR HEATING PACKAGED FOOD

Raul Guibert, Los Angeles, Calif., assignor to Sunset Ltd., Los Angeles, Calif.

Division of Ser. No. 322,084, Nov. 17, 1981, Pat. No. 4,381,443, which is a continuation-in-part of Ser. No. 277,027, Jun. 24, 1981, Pat. No. 4,381,442. This application Sep. 3, 1982, Ser. No. 414,880
Int. Cl.³ F24C *15/32*; A21B *1/22*
U.S. Cl. 219—400 **3 Claims**



1. A unit for heating packages of food to a predetermined temperature level, said unit comprising:
A. a case having a rack therein divided by shelves into compartments having open fronts for receiving the food packages, said rack being positioned in the case to define a rear air region therein, each shelf having spaced upper and lower walls to define a plenum therebetween having a rear inlet communicating with said region, said walls having holes therein;
B. means to heat the air in the region and to blow it at high velocity into the inlets of the shelves whereby hot air is emitted into the compartments through the holes to heat the food therein, and
C. means to periodically interrupt the flow of hot air into the inlets whereby the food in the compartments is subjected to a pulsatory wave of hot air whose pulses are at a temperature well above said predetermined level, the intervals between pulses permitting inward transfer of heat into the body of the food to an extent preventing heating of the body above said level.

4,455,479

ELECTRIC OVEN TOASTER

Takehiko Itoh, and Moriyoshi Sakamoto, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 169,171, Jul. 15, 1980, abandoned, which is a continuation-in-part of Ser. No. 5,679, Jan. 23, 1979, abandoned. This application Apr. 8, 1982, Ser. No. 366,669
Claims priority, application Japan, Jan. 31, 1978, 53-8939
Int. Cl.³ F27D *11/00*
U.S. Cl. 219—405 **5 Claims**

1. An electric oven-toaster adapted for toasting a slice of bread, comprising:

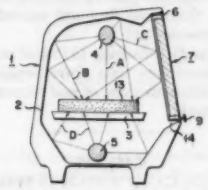
a housing enclosing a heating chamber, said housing having a front wall;

a glass window, which can be freely opened and closed, forming part of said front wall of said housing;

food holding means disposed horizontally within said heating chamber;

heating means disposed within said heating chamber for generating infrared rays, said heating means being parallel with both the inner surface of said glass window and said food holding means;

a metal holding reflecting plate disposed within said heating chamber and bent in a manner to surround said heating



means and said food holding means to reflect said infrared rays generated by said heating means such that said reflected infrared rays are substantially uniformly distributed on said food holding means; and

an infrared reflective film of metal oxide formed on the entire inner surface of said glass window; said glass window being positioned in a manner to provide a predetermined free space between the side edge of said food holding means on the side of said glass window and the lower edge of said glass window and being inclined in a manner to reflect said infrared rays toward said free space and said food holding means.

4,455,480

RICE COOKER-WARMER

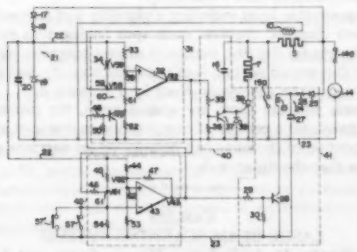
Yukio Matsumoto, Nagoya; Terutaka Aoshima, Toyohashi, and Katsuharu Matsuo, Aichi, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 4, 1982, Ser. No. 354,791

Claims priority, application Japan, Mar. 10, 1981, 56-34743

Int. Cl.[1] H05B 1/02

U.S. Cl. 219—497 **14 Claims**



1. A cooker-warmer comprising:

heat-sensitive means for generating an electric temperature signal corresponding to the temperature of a pan;

a cooking heater circuit including a cooking heater for heating the pan;

a warming heater circuit including a warming heater for warming the pan;

heater switching means for selectively rendering one of said cooking heater circuit and said warming heater circuit energizable in response to a control signal;

temperature setting means, for selectively setting one of a cooking signal, related to a predetermined cooking end temperature sitting means, and a warming signal, related to a predetermined warming temperature which is lower than said predetermined cooking end temperature, in response to a setting signal;

comparing means, for comparing said temperature signal with the output of said temperature setting means and generating a comparison signal related thereto; and

cooking mode selecting means, responsive to said comparison signal, for generating both: (1) said control signal to cause said heater switching means to energize said cooking heater circuit and (2) said setting signal to cause said temperature setting means to generate said cooking signal until said temperature signal reaches said cooking signal, and then generating both: (1) said setting signal to cause said temperature setting means to generate said warming signal and (2) said control signal to cause said heater switching means to enable said warming heater circuit to be energized when said temperature signal is less than said warming signal.

4,455,481

WINDOW PANE WITH EMBEDDED THEREIN AN ELECTRICAL HEATING WIRE

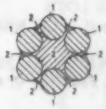
Isidoor K. Van Hoof, and Johannes H. P. M. van den Bergh, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

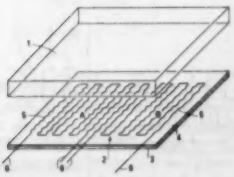
Filed Feb. 5, 1982, Ser. No. 346,306

Claims priority, application Netherlands, Feb. 9, 1981, 8100601

Int. Cl.[3] H05B 3/06

U.S. Cl. 219—522 **2 Claims**





1. A window pane having embedded therein an electrically conductive wire characterized in that said wire has a diameter of less than 3 micrometers, an electrical resistivity of from 2.0 to 5.0 $\mu\Omega$/cm and is formed of a core of an electrically conductive metal selected from the group consisting of copper, silver and gold coated with a metal cladding selected from the group consisting of tungsten, molybdenum and a tungsten molybdenum alloy blackened with a coating of graphite.

4,455,482
HEATING ASSEMBLY FOR HEATING AN AREA OF A THERMOPLASTIC PIPE

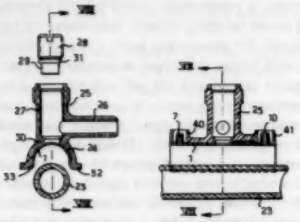
Gérard Grandclèment, Cap d'Ail, France, assignor to Innovation Technique, France

Filed Jun. 30, 1982, Ser. No. 393,783

Claims priority, application Monaco, Jul. 1, 1981, 1526; Sep. 29, 1981, 1548

Int. Cl.³ H05B *3/02*

U.S. Cl. 219—551 **12 Claims**



1. A piece-part for an assembly for heating an area of a thermoplastic pipe for providing a perforation therethrough for a junction thereto, said piece-part being constituted as a thin, flexible plate of thermoplastic material integrally molded in a unit having:

a central perforation (1');

a spiral groove (3) in one face of said plate of a size for receiving an electrical heater wire conductor snugly therein, said groove terminating at one end in the central portion of said plate at a location spaced from the edge of said perforation and terminating at its other near the periphery of said plate; and

a pair of projections (7,10) at the periphery of said plate diametrically opposite each other with respect to said perforation, extending substantially perpendicularly to said plate, and of a configuration suitable for accomodating wire-wrapped terminal portions of said wire conductor.

4,455,483
SYSTEM FOR RECORDING DATA RELATING TO SPECIFIC LOTS OF MATERIALS, PARTICULARLY TO MILK LOTS

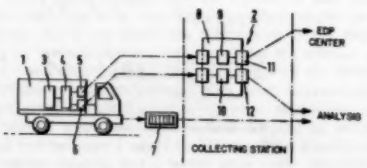
Max-J. Schönhuber, Seefeldquai 1, CH 8008 Zürich, Switzerland

Filed Oct. 22, 1981, Ser. No. 313,778

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1980, 3040171

Int. Cl.³ G01F *1/00*

U.S. Cl. 235—375 **11 Claims**



1. A system for recording data relating to specific lots of materials, particularly milk lots, which are collected at a plurality of locations by a collecting vehicle and are brought by the collecting vehicle to a collecting station, the system comprising:

recorder means in the collecting vehicle, said recorder means including data input means, control unit means, and at least first and second memory means, said control unit means controlling the input of data to said first and second memory means;

at least first and second data carrying means at said collection station, said first and second data carrying means being different from each other and being respectively associated with said first and second memory means, and at least one of said first and second data carrying means being removable from said collecting station;

converter means at said collecting station for receiving the data stored in said first and second memory means and delivering the data for storage on said first and second data carrying means, respectively;

first and second stationary data processing means for receiving the data from said first and second data carrying means, respectively; and

means for separately delivering to one of said data processing means identifying data corresponding to the data stored in the respective one of said recorder means in the collecting vehicle.

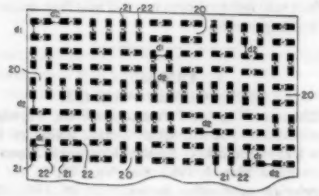
4,455,484
IDENTIFICATION CARD WHICH IS MAGNETICALLY CODED TO PREVENT COUNTERFEITING

Edwin N. Whitehead, Alexandria, Va.

Continuation-in-part of Ser. No. 236,354, Feb. 20, 1981, abandoned, which is a continuation-in-part of Ser. No. 911,588, May 31, 1978, Pat. No. 4,253,017, which is a continuation-in-part of Ser. No. 487,757, Jul. 11, 1974, Pat. No. 4,097,219, which is a continuation-in-part of Ser. No. 431,803, Jan. 8, 1974, abandoned, which is a continuation of Ser. No. 223,649, Feb. 4, 1972, abandoned. This application Apr. 23, 1982, Ser. No. 371,322

Int. Cl.³ G06K *19/06*

U.S. Cl. 235—493 **29 Claims**



1. Apparatus for providing substantially counterfeit-proof identification device comprising:

an identification card comprising:

a magnetizable layer including a plurality q of magnetizable spots disposed thereon, each spot having two portions wherein (a) the first portion is of one magnetic polarity, (b) the second portion is of the other polarity, and (c) the two portions are spaced apart by a distance d_1;

wherein adjacent spots are spaced apart, the distance d_2 between (a) a portion of one polarity on one spot and (b) a portion of the opposing polarity on an adjacent spot is less than the distance d_1.

4,455,485
LASER BEAM SCANNING SYSTEM

Sumio Hosaka, Hachioji; Tatsuo Harada, Fuchu, and Akihiro Takanashi, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 25, 1981, Ser. No. 324,791

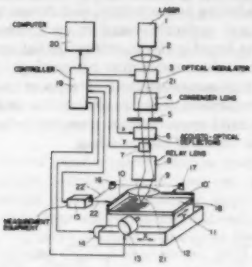
Claims priority, application Japan, Nov. 26, 1980, 55-168357[U]

Int. Cl.³ H01J *3/14*

U.S. Cl. 250—234 **5 Claims**

1. A laser beam scanning system for scanning the surface of a specimen with a laser beam having a fine spot diamter, com-

prising: means for producing a finely-focused laser beam, an acousto-optical deflector for deflecting said laser beam at a high speed with a small field at a deflecting point; an objective lens for focusing the laser beam from said acousto-optical deflector to a spot having a fine diameter upon the surface of



the specimen; a relay lens interposed between said acousto-optical deflector and said objective lens for projecting the laser beam deflecting point toward the center of said objective lens; and specimen positioning means including a specimen carriage for moving said specimen in the directions of two orthogonal axes in a parallel plane to said specimen surface.

4,455,486

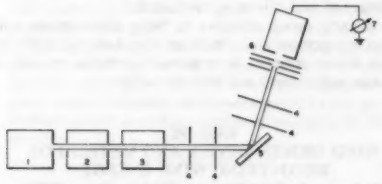
METHOD AND APPARATUS FOR DETECTING MAGNETISM BY MEANS OF ELECTRON SPIN POLARIZATION MEASUREMENTS THROUGH DIELECTRONIC TRANSITION

Carl Rau, Feldmochingerstr. 66, Munich 50, Fed. Rep. of Germany (D-8000)

Filed Aug. 12, 1981, Ser. No. 292,203

Int. Cl.³ G01N *23/00*

U.S. Cl. 250—306 **10 Claims**



7. Apparatus for determining the magnetic characteristics of a body, comprising:

means for generating a beam of particles, which particles undergo a known ionization state change in response to an exchange of two electrons having predetermined angular moments;

means for focusing said beam on said body such that said beam is reflected from the subface of said body; and

means for measuring the number of particle ionization state changes which occurred as a result of an exchange of 2 electrons in said reflected beam, as an indication of the magnetic value of the body.

4,455,487

FIRE DETECTION SYSTEM WITH IR AND UV RATIO DETECTOR

Roger A. Wendt, Londonderry, N.H., assignor to Armtec Industries, Inc., Manchester, N.H.

Filed Oct. 30, 1981, Ser. No. 316,923

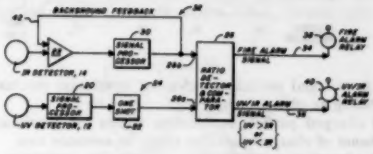
Int. Cl.³ G01J *1/00*

U.S. Cl. 250—339 **12 Claims**

1. Means for automatically detecting flames in a preselected zone with an extremely low incidence of false alarms due to naturally occurring and man-made background radiation not generated by a flame comprising:

means for detecting ultraviolet (UV) radiation eminating from said preselected zone and generating a first signal corresponding to said UV radiation incident upon said UV detecting means;

means for detecting infrared (IR) radiation also eminating from said preselected zone and occurring in a narrow band, and generating a second signal corresponding to said IR radiation incident upon said IR detecting means;



electronic means for processing said first signal to produce a normalized UV signal;

electronic means for processing said second signal to produce a normalized IR signal; and

electronic means for forming a ratio of said normalized UV signal to said normalized IR signal, comparing said ratio to a known range of values that is characteristic of the flames being detected, and generating a fire signal if said ratio falls within said range.

4,455,488

RADIATION DETECTOR

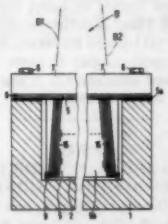
Bernhard Conrad; Johann Finkenzeller, both of Erlangen; Gerhard Küehn, Poxdorf, and Wolfhart Lichtenberg, Reinbek, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 25, 1982, Ser. No. 361,990

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1981, 3114692

Int. Cl.³ G01T *1/18*

U.S. Cl. 250—385 **2 Claims**



1. A radiation detector for a flat radiation beam, comprising a housing having a pressure-tight closed chamber, filled with a gas under pressure, electrode means arranged in the chamber and having electrical connections extending toward the exterior of the chamber, characterized in that said electrode means comprises a common electrode disposed in the chamber parallel to the beam plane, said common electrode extending over the entire beam width, a common support being arranged opposite said common electrode, and a series of individual electrodes applied to the common support so as to lie opposite said common electrode and in spaced parallel relation to said common electrode, characterized in that the individual electrodes are applied in the form of printed conductors, said common support comprising a printed circuit board of insulating material.

4,455,489

QUADRUPOLE SINGLET FOCUSING FOR ACHROMATIC PARALLEL-TO-PARALLEL DEVICES

Karl L. Brown, Menlo Park, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Nov. 19, 1981, Ser. No. 323,009
Int. Cl.³ H01J *3/20, 3/32*
U.S. Cl. 250—398 **5 Claims**

1. A charged particle accelerator irradiation machine for irradiating an object comprising:

(a) charged particle accelerator means for accelerating a beam of charged particles along an entrance axis,

(b) a bending magnet system for bending said beam away from said axis through a deflection angle ψ with respect to said entrance axis, thereby defining a first plane containing the bending angle ψ and a second plane perpendicular to said first plane, said bending magnet system comprising,

(1) a first uniform magnetic field region and adjacent thereto, a second uniform magnetic field region, said magnetic fields of first and second region in the same direction, the magnetic field of said second region greater than the magnetic field in said first region, said first region comprising a first field boundary remote from said second region and said first and second regions comprising a second field boundary, said second field boundary forming a straight line,

(2) means for injecting said beam of charged particles into said first region through an entrance plane at said first boundary normal to said entrance axis and displaced therefrom by an entrance drift space, and at an angle B_i with respect to said first boundary in the plane of deflection whereby said beam is deflected through an angle α_1 with respect to said first boundary in the plane of deflection whereby said beam is deflected through an angle α_1 in the deflection plane into said second region and thence through said second boundary at an angle β_2 therewith and again deflected through an angle $2\ \alpha_2$ in said second region to again enter said first region whereby said beam is deflected through an additional angular interval α_1, and traverses an exit drift space. p1 (c) a quadrupole singlet element of adjustable focal length disposed substantially at said entrance plane for causing said waists to coincide.

4,455,490

STARTING APPARATUS FOR INTERNAL COMBUSTION ENGINES

Dante S. Giardini, Dearborn Heights, and Lawrence R. Foote, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 16, 1982, Ser. No. 368,935
Int. Cl.³ F16D *27/10;* **F02N** *15/06*
U.S. Cl. 290—38 A **17 Claims**

1. In an internal combustion engine starting apparatus having an annular driven member carried by the engine flywheel and a starter motor with a field winding and armature, said driven member having opposed conical surfaces related to each other to present a common crest forming the outermost radial extremity of said driven member, the combination comprising:

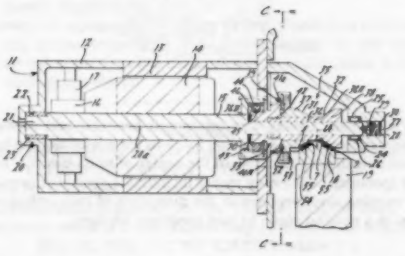
(a) supporting means effective to support said armature for rotary movement about an axis within said field winding and for axial movement in response to axially directed magnetic forces of said winding;

(b) friction means effective to sequentially engage each of said surfaces of said driven member in response to said axial movement of said armature; and

(c) means assisting the frictional engagement between said surfaces of said driven member and said friction means.

10. In an engine starting apparatus having an annular driven member carried by the engine flywheel and a starter motor with a field winding and armature, said driven member having opposed conical surfaces related to each other to present a common crest forming the outermost radial extremity of said driven member, the combination comprising:

(a) supporting means effective to support said armature for rotary movement about an axis within said field winding and for axial movement in response to axially directed magnetic forces of said winding;



(b) a sleeve slidably mounted on said armature and coupled thereto for conjoint rotation;

(c) a response roller integral with said sleeve;

(d) a control roller slidably mounted on said sleeve and coupled thereto for rotation with said sleeve in one driving rotatable direction, said control roller being engageable with one of said conical surfaces of said driven member in response to said axial movement of said armature, each of said control and response rollers carrying a conical surface mateable with one of said opposed conical surface of said driven member; and

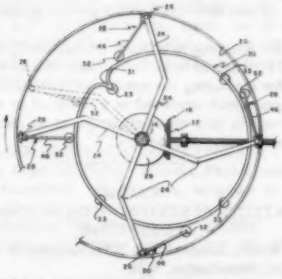
(e) camming means effective to bring said response roller into engagement with the other of said conical surfaces of said driven member in response to relative rotation between said control and response rollers.

4,455,491

WIND DRIVEN DEVICE AND METHOD OF RECOVERING WIND ENERGY

Ralph A. Lanzrath, 1857 Wawona, Wichita, Kans. 67206

Filed Apr. 11, 1983, Ser. No. 470,926
Int. Cl.³ F03B *3/14;* **F03D** *7/06*
U.S. Cl. 290—44 **5 Claims**



1. A wind driven device for driving an electrical generator to produce electricity comprising a base;

an anchor pole stationarily affixed to the base;
a drive assembly support rotatably mounted around the anchor pole;
power drive means secured to the lower portion of the drive assembly support, said power drive means comprises at least two intermeshing gear means, at least one gear means secured to the lower portion of the drive assembly and at least one another gear means meshing at right angles with the drive assembly gear means and having a generator shaft secured thereto;
an upper exterior wind column support means;
a lower exterior wind column support means;
a plurality of attachment beams connected to the drive assembly;
a plurality of wind panel support columns, each wind panel support column connecting to at least one of the attachment beams and to the upper exterior support means and to the lower exterior support means and including a transport wheel rotatably secured underneath thereto to support the support column against the grid as the wind driven device revolves about its anchor pole;
a plurality of wind panel means pivotally engage to the wind panel support columns and responsive to the wind such that the force of the wind against the wind panel means causes the drive assembly support and the attached power drive means to revolve to provide for a power takeoff from the revolving power drive means to drive the electrical generator;
and a mobile wind panel angle selection guide means positioned around the drive assembly support to permit operation of the wind driven device when the direction of the wind changes, said selection guide means has a generally circular structure defining an indentation for changing the angular traveling position of each wind panel means about and with respect to the selection guide means; and
each of said wind panel means comprises an angle selection wheel for traversing the exterior circular surface of the selection guide means to angle each of the wind panel means to the appropriate angle of the wind and adapted in operation to temporarily lodge in the indentations for changing the angular position of each wind panel means with respect to the selection guide means by displacing the angle selection wheel of a particular wind panel means from a forward position with respect to the column support of the particular wind panel means to a following position with respect to the same, said particular wind panel means being essentially juxtaposed to and generally flushed against one of its attachment beams in the forward position.

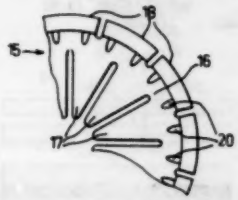
4,455,492

POWER UNIT FOR MOTOR VEHICLE UTILIZING A THERMAL ENGINE DOWN TO THE LOWEST RUNNING SPEEDS

Jean Guelpa, 81 Ave. Corentin Cloarec, 92270 Bois-Colombes, France

PCT No. PCT/FR80/00137, 371 Date May 14, 1981, 102(e) Date May 14, 1981, PCT Pub. No. WO81/00833, PCT Pub. Date Apr. 2, 1981
PCT Filed Sep. 16, 1980, Ser. No. 269,040
Claims priority, application France, Sep. 19, 1979, 79 23343
Int. Cl.³ B60L *11/14;* H02J *7/14*
U.S. Cl. 290—45 **14 Claims**

1. A power unit for automobile comprising an internal combustion engine operating according to the reciprocating cycle driving the wheels with its conventional inertia flywheel, a reversible electric machine, a storage battery, a speed variator coupling the electric machine to the internal combustion engine for producing a resultant torque, and an electric control circuit, characterized by the fact that:
said electric circuit is arranged for enabling the internal combustion engine to operate at rotational speeds considerably lower than those afforded by its flywheel, by regularizing its torque by means of instantaneous and alternately positive and negative exchanges of mechanical energy between the internal combustion engine and the electric machine, and of electrical energy between the electric machine and the storage battery, mainly within the same cycle of the internal combustion engine, however with average r.m.s. power values delivered or received by the electric machine and the storage battery which remain zero or relatively very low with respect to the maximum power output of the internal combustion engine, that said electric circuit comprises another arrangement permitting, between the internal combustion engine, on the one hand, the electric machine and the storage battery, on the other hand, considerable ex-



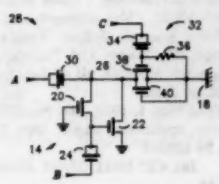
changes of efficient power but only during the acceleration or deceleration periods, and during time periods not in excess of a few seconds,
and that the scaling-down ratio of said variator is controlled by means of a suitable device as a function of the measured velocity of rotation of the engine shaft or of a shaft rotating at a speed proportional thereto, and is so designed as to transmit a relatively high driving or reaction torque at low engine speeds when the variator is in its position providing the maximum scaling down, this torque decreasing rapidly with said scaling down when the engine speed increases, in order to transmit at medium and high engine speeds a considerably lower torque with a better efficiency.

4,455,493

SUBSTRATE BIAS PUMP

Bruce L. Morton, Round Rock, and Jerry D. Moench, Austin, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 30, 1982, Ser. No. 394,030
Int. Cl.³ H01L *29/78;* H03K *17/16, 17/693*
U.S. Cl. 307—296 R **6 Claims**



1. A substrate bias pump coupled to a substrate for maintaining the substrate at a predetermined voltage comprising:
a first coupling capacitor for coupling an applied voltage to a pump node;
clamping means coupled between the pump node and a reference terminal for clamping the pump node to allow the capacitor to be charged;
a first transistor having a first current electrode coupled to the pump node, a second current electrode connected to the substrate, and a control electrode;
a second coupling capacitor for coupling a control signal to the control electrode of the first transistor; and

a resistor coupled between the substrate and the control electrode of the first transistor.

4,455,494

ELECTRET DEVICE

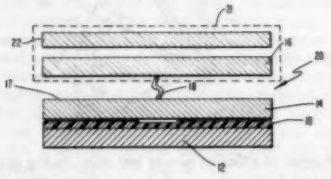
Masamichi Tanaka, Yamato, and Hiroto Wada, Yokosuka, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 280,054, Jun. 30, 1983, abandoned. This application Jun. 3, 1983, Ser. No. 500,830

Claims priority, application Japan, Jun. 30, 1980, 55-88819; Jun. 30, 1980, 55-88824

Int. Cl.³ G11C *13/02*

U.S. Cl. 307—400 **3 Claims**



1. An electret device comprising:

a dielectric body provided with electric charges,

a conductive electrode secured on one surface of said dielectric body,

a cover body comprised of a conductive material and attached on the opposite surface of said dielectric body, and

a remote electrode electrically connected to said cover body through a conductive wire, said remote electrode comprising part of a transducing capacitor responsive to physical variations, but said dielectric body not being part of said transducing capacitor.

4,455,495

PROGRAMMABLE SEMICONDUCTOR INTEGRATED CIRCUITRY INCLUDING A PROGRAMMING SEMICONDUCTOR ELEMENT

Toshiaki Masuhara, Hachioji; Osamu Minato, Kodaira; Katsuhiro Shimohigashi, Musashimurayama; Hiroo Masuda, Kodaira; Hideo Sunami, Tokyo; Yoshio Sakai, Hachioji; Yoshiaki Kamigaki, Tokyo; Eiji Takeda, Koganei, and Yoshimune Hagiwara, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

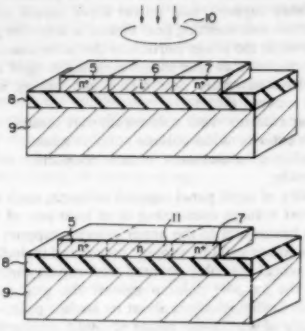
Filed Oct. 1, 1980, Ser. No. 192,869

Claims priority, application Japan, Oct. 1, 1979, 54-125404; Oct. 19, 1979, 54-134165

Int. Cl.³ H01L *27/04, 29/04*

U.S. Cl. 307—44 **37 Claims**

1. A programmable semiconductor integrated circuit including in a semiconductor substrate a regular circuit, a spare circuit, and at least one circuit programming element which has a first terminal connected to the regular circuit and a second terminal connected to the spare circuit and which, when at least a part of the regular circuit is defective, is characterized by being convertible from its original nonconductive state to a conductive state so that the defective part of the regular circuit is replaced by the spare circuit through the conversion of the circuit programming element, wherein said circuit programming element comprises a semiconductor element including two spaced low-resistance portions as said first and second terminals laterally provided on an insulating layer disposed on said semiconductor substrate and an intermediate high-resistance portion disposed adjacent to and between said



low-resistance portions and electrically coupled to said low-resistance portions.

4,455,496

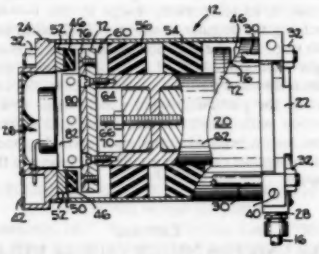
ELECTROMAGNETIC VIBRATORY EXCITER

Arthur L. Dean; Robert E. Kraft, and Kenneth M. Marshall, all of Indiana, Pa., assignors to FMC Corporation, Chicago, Ill.

Filed Feb. 25, 1982, Ser. No. 352,284

Int. Cl.³ H02K *33/00*

U.S. Cl. 310—29 **16 Claims**



1. An electromagnetic vibratory exciter comprising:

an exciter body including a housing supporting a plurality of electromagnet means directed toward the inside of said exciter body;

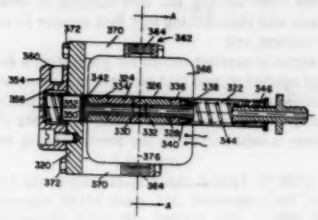
a plurality of non-linear spring means carried in said exciter body, one of each of said plurality of non-linear spring means inboard and longitudinally adjacent one of each of said plurality of electromagnet means, each non-linear spring means including a first pair of elastomeric spring means having one of each of said pair mounted diametrically opposite the other of said first pair disposed relative to the longitudinal axis of said exciter body and a second pair of elastomeric spring means having one of each of said pair mounted diametrically opposite the other of said second pair axially disposed relative to the longitudinal axis of said exciter body;

a free mass including armature means supported for longitudinal movement in said exciter body sequentially toward first one than another of said plurality of electromagnet means.

4,455,497
LINEAR MOTION DEVICES

Shmuel Shtrikman, Rehovot, Israel, assignor to Yeda Research and Development Co., Ltd., Rehovot, Israel

Division of Ser. No. 13,680, Feb. 21, 1979, Pat. No. 4,346,318.
This application Jun. 11, 1982, Ser. No. 387,482
Claims priority, application Israel, Feb. 22, 1978, 54107
Int. Cl.³ H02K *33/12*
U.S. Cl. 310—30 3 Claims



1. Apparatus producing linear motion for providing gas compression comprising:

a base;

a coil mounted on said base and adapted for receiving AC power and for producing an AC magnetic field across a gap;

a compressor tube mounted on said base, extending through said gap along a longitudinal axis of motion and defining a gas inlet and a gas outlet;

first one way valve means associated with said compressor tube;

a cylindrical permanent magnet disposed within said compressor tube for slidable motion relative thereto along said longitudinal axis of motion in the magnetic field in said gap and arranged to be driven in motion by the magnetic field, the permanent magnet comprising first and second cylindrical sections, magnetized in respective opposite directions and being configured such that their axes of magnetization lie along their smallest dimension and perpendicular to said longitudinal axis of motion;

said cylindrical permanent magnet being formed with an elongate longitudinal passageway extending therethrough for permitting gas passage; and

second one way valve means associated with said elongate longitudinal passageway;

whereby movement of said permanent magnet in said compressor tube provides a forced gas flow via said longitudinal passageway.

4,455,498
MEANS FOR ADJUSTING MOTOR END PLAY

Richard E. DeSisto, 301 W. Ridge St., Carlisle, Pa. 17013

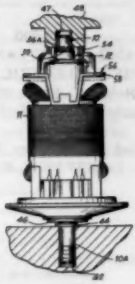
Continuation of Ser. No. 218,395, Dec. 19, 1980. This application Aug. 19, 1982, Ser. No. 409,766
Int. Cl.³ H02K *15/16*
U.S. Cl. 310—42 4 Claims

1. In a motor having a rotor shaft extending through a casing, such shaft carrying an armature, and in which the distance between the assembled front and rear bearings of the motor is affected by accumulated manufacturing tolerance such that said distance is indeterminate, being variable on the order of plus or minus 0.060 inches, the end of said assembled rear bearing constituting a variable, first reference point, the improvement comprising:

(a) retaining means for insuring that a substantially fixed, minimum value for end play is automatically established despite said variability, said retaining means including a self-locking unitary retainer ring operative to grip the shaft in a location on the shaft axially outboard of the rear bearing;

(b) means for referencing said retaining means to a variable second reference point at the end of said motor casing, the location of said reference point likewise varying in accordance with said variable accumulated tolerance for a given motor;

(c) means on said referencing means, having a fixed dimension, for moving said retaining means along said rotor shaft, whereby the spacing of the inner surface of said

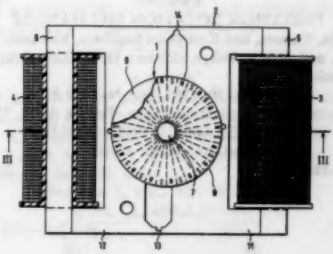


retainer ring from said assembled rear bearing is automatically determined by such fixed dimension, said spacing corresponding to the difference between (1) the substantially fixed distance from said first reference point at the end of the assembled rear bearing to the second reference point at the end of the casing and (2) the sum of said fixed dimension and the thickness of said retainer ring.

4,455,499
TWO-PHASE STEPPING MOTOR

Roland Sudler, Frankfurt am Main, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 424,716
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1981, 3149943
Int. Cl.³ H02K *37/00*
U.S. Cl. 310—49 R 8 Claims



1. In a two-phase stepping motor having a rotor with a disk-shaped axially magnetized permanent magnet which has a number of poles of constant pole spacing, a first stator part which bears an exciter winding and has first stator poles extending parallel to one face of the permanent magnet and a second stator part which bears an exciter winding and has second stator poles extending parallel to the face of the permanent magnet, the improvement wherein

the two stator parts are arranged, at least in the region of the stator poles in the same plane and are connected with each other in this plane by intermediate pieces which are of low magnetic conductance,

the first and second stator poles are subdivided in each case

into two groups which are magnetically separated from each other, the one group being shifted by one rotor-pole spacing from the other, the two groups of the first stator poles are shifted with respect to the two groups of the second stator poles by half a rotor-pole spacing, and

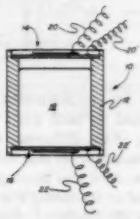
a return-flux disk for the induction fluxes coming from the exciter windings is present on a face of the permanent magnet which faces away from the stator poles.

4,455,500

SENSITIVITY AND CAPACITANCE ADJUSTMENT METHOD FOR PIEZOELECTRIC ACCELEROMETERS

Carl H. Savit, and Robert C. Shopland, both of Houston, Tex., assignors to Westerr Geophysical Company of America, Houston, Tex.

Filed Jul. 28, 1983, Ser. No. 517,899
Int. Cl.[3] H01L *41/08*
U.S. Cl. 310—312 7 Claims



1. In a piezo-electric crystal transducer assembly including ceramic-wafer electrcded sensing element, a method for adjusting the sensitivity and capacitance of the assembly relative to an arbitrarily-selected standard, comprising:

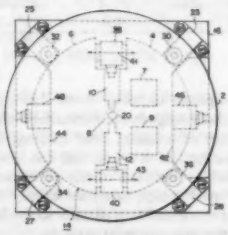
laser-trimming a symmetrical pattern of vaporization spots on a ceramic wafer, the spots having desired dimensions of trim depth, trim area and trim-pattern distance and location, that are selected in accordance with a desired degree of adjustment in sensitivity and capacitance.

4,455,501

PRECISION ROTATION MECHANISM

Toru Tojo, Yamato, and Kazuyoshi Sugihara, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 30, 1982, Ser. No. 429,230
Claims priority, application Japan, Feb. 9, 1982, 57-19328; Apr. 28, 1982, 57-72422; Apr. 28, 1982, 57-72423
Int. Cl.[3] H01L *41/08*
U.S. Cl. 310—328 24 Claims



1. A precision rotation mechanism comprising:

a base having a surface;

a rotor rotatably mounted on the surface of said base and including first and second sections;

means for defining the rotation center of said rotor;

a first piezoelectric element capable of elongation and contraction which is coupled between the first and second sections of said rotor in the direction of elongation and contraction;

a first and a second stopper for locking the respective first and second sections against rotation about said center of rotation;

means for driving the second stopper to lock the second section after driving the first stopper to lock the first section, and then driving said first stopper to release said first section; and

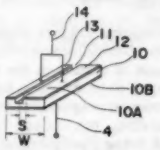
a first signal generating means for generating a first voltage signal applied to said first piezoelectric element, said first piezoelectric element being elongated or contracted according to the first voltage signal, while one of said two sections is held locked by the corresponding stopper.

4,455,502

RECTANGULAR PIEZOELECTRIC RESONATOR WITH OFFSET SLOT

Hiroshi Nakatani, Kanazawa, Japan, assignor to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Jul. 8, 1983, Ser. No. 512,124
Claims priority, application Japan, Jul. 9, 1982, 57-104645[U]
Int. Cl.[3] H01L *41/08*
U.S. Cl. 310—368 3 Claims



1. A strip type piezoelectric resonator utilizing length mode vibration, which comprises a piezoelectric ceramic substrate, and first and second main electrode faces formed on opposite surfaces of the piezoelectric ceramic substrate, the improvement comprising a groove which is formed on one of said first and second main electrode faces so as to extend over an entire length of the piezoelectric ceramic substrate in a direction parallel to the longitudinal direction thereof, and at a position deviated from a center in a widthwise direction of the piezoelectric ceramic substrate by more than 2% of the width of said piezoelectric ceramic substrate.

4,455,503

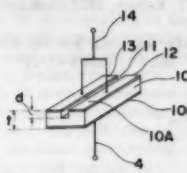
RECTANGULAR PIEZOELECTRIC RESONATOR WITH A SLOT IN ONE SURFACE

Hiroshi Nakatani, Kanazawa, Japan, assignor to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Jul. 8, 1983, Ser. No. 512,125
Claims priority, application Japan, Jul. 9, 1982, 57-104646[U]
Int. Cl.[3] H01L *41/08*
U.S. Cl. 310—368 4 Claims

1. A strip type piezoelectric resonator utilizing length mode vibration, which comprises a piezoelectric ceramic substrate, and first and second main electrode faces formed on opposite surfaces of the piezoelectric ceramic substrate, the improvement comprising a groove which is formed on one of said first and second main electrode faces so as to extend over an entire

length of the piezoelectric ceramic substrate in a direction parallel to the longitudinal direction thereof, said groove being



set to have a depth in the range of 30 to 70% of the thickness of said piezoelectric ceramic substrate.

4,455,504

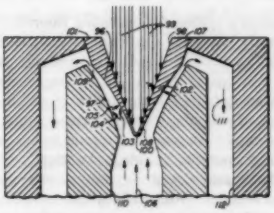
LIQUID COOLED ANODE X-RAY TUBES

Arthur H. Iversen, 15315 Sobey Rd., Saratoga, Calif. 95070

Continuation-in-part of Ser. No. 250,275, Apr. 2, 1981, Pat. No. 4,405,876. This application Nov. 29, 1982, Ser. No. 445,212

Int. Cl.³ H01J *35/12*

U.S. Cl. 313—30 **60 Claims**



1. In apparatus of the type including a stationary anode adapted for irradiation by an energy beam, and including a heat exchange surface said apparatus including means for providing a flow of coolant liquid to remove heat from said heat exchange surface by formation of nucleate vapor bubbles on said heat exchange surface, said liquid tending to include a viscous sublayer adjacent to said heat exchange surface, the improvement wherein said heat exchange surface includes

means, disposed on said heat exchange surface, for forming nucleate bubbles of predetermined size and distribution to thereby increase heat flux.

4,455,505

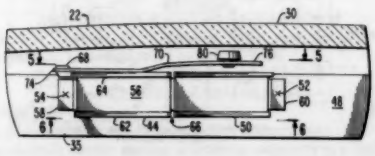
COLOR PICTURE TUBE HAVING IMPROVED TEMPERATURE COMPENSATING SUPPORT FOR A MASK-FRAME ASSEMBLY

Frank R. Ragland, Jr., Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 4, 1981, Ser. No. 299,792

Int. Cl.³ H01J *29/07*

U.S. Cl. 313—404 **7 Claims**



1. In a color picture tube including an evacuated envelope enclosing an apertured mask attached to a frame which is suspended in relation to a screen by support means, said frame having two flanges formed in an L-shape with a first of the flanges extending toward the screen and a second of the flanges extending inwardly toward the center of the tube, the improvement comprising

said support means including an elongated metal arch member attached to the second flange of said frame, said arch member being of a material having a different coefficient of thermal expansion than said frame, said arch member including a base portion which is angled in the center to space the center of said base portion from the second flange of said frame and said arch member including two sections at the ends of said base portion which are substantially copolanar and are welded to the second of the flange of said frame and a spring having one end attached to a side of said base portion between one of the two sections and the angled center of said base portion and the other end engaging said envelope.

4,455,506

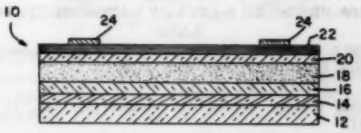
CONTRAST ENHANCED ELECTROLUMINESCENT DEVICE

Murthy S. Ayyagari, North Reading; Martin P. Schrank, Ipswich, and Richard M. Coppola, Beverly, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed May 11, 1981, Ser. No. 262,097

Int. Cl.³ H01J *1/62, 63/04*

U.S. Cl. 313—506 **6 Claims**



1. An electroluminescent device comprising a transparent electrode layer and a segmented electrode layer having an electroluminescent phosphor therebetween, and a contrast enhancing layer between said electroluminescent phosphor and said segmented electrode layer, said contrast enhancing layer comprising a cermet of Cr_2O_3 and Cr.

4,455,507

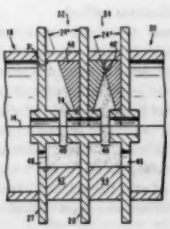
DOUBLE WEDGE TERMINATION DEVICE FOR COUPLED CAVITY TRAVELING WAVE TUBES

Norman A. Greco, Torrance, and Simon Z. Arkoff, Rancho Palos Verdes, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Apr. 2, 1982, Ser. No. 364,947

Int. Cl.³ H01J *25/34*

U.S. Cl. 315—3.5 **6 Claims**



1. In a coupled-cavity traveling-wave tube having a longitudinal axis and a plurality of termination chambers disposed

therealong, each termination chamber being defined by first and second axially spaced radially extending walls and a circumferentially extending wall having an interior surface joining said first and second radially extending walls, a termination device disposed within each termination chamber for absorbing incident electromagnetic wave energy, said termination device comprising:

two substantially wedge-shaped portions of lossy material disposed in said termination chamber, each substantially wedge-shaped portion having a first surface sloped with respect to a second surface, the intersection of said first and second surfaces defining the edge of the substantially wedge-shaped portion;

said two substantially wedge-shaped portions being disposed with their respective second surfaces parallel and proximate to respective ones of said radially extending walls of said termination chamber and with their respective first surfaces in facing relationship and sloping toward one another;

the greatest separation between said first surfaces being at said edges, and said edges being disposed proximate and perpendicular to said longitudinal axis.

4,455,508

LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP

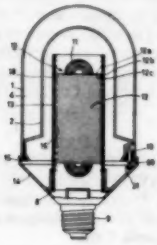
Gustaaf A. Wesselink, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 21, 1981, Ser. No. 294,868

Claims priority, application Netherlands, Sep. 11, 1980, 8005112

Int. Cl.³ H01J 7/44

U.S. Cl. 315—62 **11 Claims**



1. A low-pressure mercury vapor discharge lamp which comprises:

an electric stabilization ballast;

a discharge vessel in which is closed in a vacuum-tight manner and which encloses electrodes between which a discharge is present during operation of the lamp, said discharge vessel containing mercury and a rare gas, said discharge vessel being shaped and dimensioned so that the discharge path is curved in one or more places;

a thin walled member of a heat conductive material disposed in heat conducting relation with a major portion of the outer surface of said ballast, substantially all of said member being intermediate said ballast and said discharge vessel; and

a heat conducting collar extending from said thin walled member, said collar engaging said discharge vessel and said thin walled member consisting of aluminium.

4,455,509

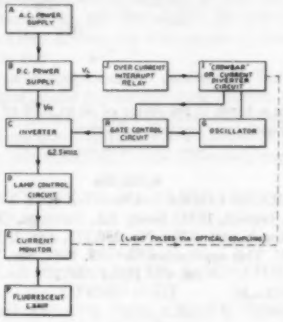
INTRINSICALLY SAFE LIGHTING SYSTEM

Stephen T. Crum, 1598 Highland Park, Barboursville, W. Va. 25504, and Lyle T. Keister, 1572 Campbell Dr., Huntington, W. Va. 25705

Filed May 16, 1983, Ser. No. 494,620

Int. Cl.³ H05B 41/29

U.S. Cl. 315—119 **5 Claims**



1. In a lighting system for operating fluorescent lamps with high frequency power in a potentially explosive atmosphere, an intrinsically safe control system individually associated with each lamp, comprising: DC to AC inverter means productive of high frequency output; lamp control circuit means powered by the output of said inverter means; current monitoring means in circuit with said lamp control circuit means and the associated lamp and operable to detect abnormally high current in the lamp circuit; said monitoring means comprising impedance components in series with said lamp control circuit means and said lamp; each impedance component being in parallel with series related zener and light emitting diodes such that any abnormally high or transient current in the lamp circuit causes one or more light emitting diodes to emit light; and diverter means activated by such diode emitted light to effect deactivation of said inverter means thereby to cut off the lamp's power supply; said deactivation being sufficiently rapid as to avoid incendive sparking in the circuit.

4,455,510

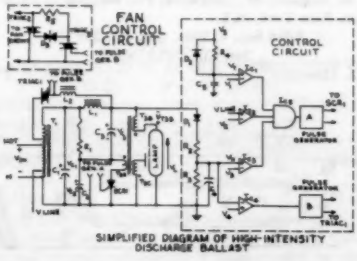
HIGH INTENSITY DISCHARGE BALLAST WITH HOT RESTRIKE PERFORMANCE

Robert J. Lesko, Newton, N.J., assignor to HID Systems, Inc., Sparta, N.J.

Filed May 20, 1982, Ser. No. 380,463

Int. Cl.³ H05B 41/22

U.S. Cl. 315—263 **3 Claims**



1. A ballast circuit for a High Intensity Discharge (HID) Lamp, comprising:

voltage source means for supplying voltage to the electrodes of the high intensity discharge lamp;
means for detecting the voltage across the electrodes;
a first pulse generator;
control circuit means responsive to said voltage detection means for controlling said first pulse generator;
a silicon controlled rectifier (SCR) driven by said first pulse generator at a predetermined rate;
a first plurality of electrical components including diodes, capacitors, resistances, transformers and inductors operatively associated with each other; certain ones of said first plurality of electrical components connected to form a first resonant circuit and operatively connected in series with said SCR to fire the discharge lamp, said first plurality of components activated by said SCR, whereby said first resonant circuit produces transient voltages to cause the initial breakdown of said HID lamp in response to the output of said first pulse generator;
certain ones of said first plurality of electrical components operatively associated with each other to form a second resonant circuit, said second resonant circuit connected in circuit with and activated by said SCR, whereby sufficient voltage is supplied to
said HID Lamp to form a hot spot in said HID lamp;
said control circuit means including first comparator circuit means for comparing the voltage detected across the electrodes to a first reference voltage (V_3), whereby when said detected voltage falls below said first reference voltage, said control circuit means deactivates said SCR through said first pulse generator; said control circuit means further including a second plurality of electrical components including diodes, capacitors, resistances operatively connected to each other to form a timing circuit, and a second comparator circuit means, the input of said second comparator circuit means operatively connected to said timing circuit and a second reference voltage (V_1), the output of said second comparator circuit means connected through said first pulse generator to said SCR, whereby if after turn on the lamp does not ignite, or fails, after a predetermined time interval measured by said timing circuit, said SCR is deactivated, said control circuit means further comprising third comparator circuit means for comparing a first voltage proportional to the line voltage, to a third reference voltage (V_2), the output of said third comparator circuit means connected through said first pulse generator to said SCR, said SCR deactivated when said first voltage is below said third reference voltage, indicating a low line voltage;
a second pulse generator;
fourth comparator circuit means operatively connected to said voltage detection means and a fourth reference voltage, said second pulse generator activated by the output of said fourth comparator means when said detected electrode voltage falls below said fourth reference voltage;
an inductor, (L_2), and
a first triac operatively connected to said voltage source means and to said lamp through said inductor, (L_2), said triac driven by said second pulse generator, whereby fast warm up current flows through said triac and said inductor (L_2) to said lamp until said detected electrode voltage reaches said fourth reference voltage.

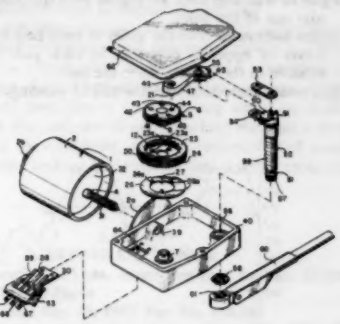
4,455,511

WINDSHIELD WIPER MECHANISM

Kenneth W. Stewart, Sr., Columbus, Miss., assignor to AMBAC Industries, Incorporated, Columbus, Miss.

Filed Mar. 4, 1983, Ser. No. 472,168
Int. Cl.³ H02K *7/06*; H02P *1/02*
U.S. Cl. 318—9 **9 Claims**

1. A windshield wiper mechanism comprising:
an electric motor having a housing supporting a field and rotatably supporting an armature with a shaft;
a drive frame supported on the motor housing;
a driving rotatable member rotatably supported on the drive frame coupled to and rotated by the motor shaft and having teeth at a common radius;
parking switch means on the rotatable member to stop the wiper at a predetermined position;
a rotatably supported drive plate having interfitting teeth that mesh with the teeth of the driving rotatable member readily removable and repositionable in a plurality of positions relative to the driving rotatable member so as to change the relative positioning of the two, said drive plate having at least one hole parallel to and located at a predetermined radial distance from the central axis about which the drive plate rotates as the motor shaft rotates;
a pin positionable in said at least one hole;
a drive link engaging said pin such that rotational movement can occur between the link and the drive plate;



a shaft parallel to the axis of drive plate rotation rotatably supported on the drive frame for driving a wiper arm and blade and fixed to lever means at one end, the other end of said lever means being coupled to said other end of the drive link so that reciprocating motion imparted to the end of the drive link causes the shaft to oscillate, thereby moving the wiper arm and blade back and forth through a predetermined angle in the course of a revolution of the drive plate, such that by disengagement of the drive plate from the driving rotatable member and reengagement in a new rotationally reoriented position and reassembly with the same connections the position in the wiper movement at which parking occurs may be changed without changing amplitude or wipe pattern of the blade.

4,455,512

SYSTEM FOR LINEAR MOTOR CONTROL

William J. Cornwell, Saratoga; Tex M. Dudley, Palo Alto, and William H. Lee, Los Altos Hills, all of Calif., assignors to General Signal Corporation, Stamford, Conn.

Filed Apr. 23, 1982, Ser. No. 371,426
Int. Cl.³ G05B *19/40*, *1/01*
U.S. Cl. 318—135 **20 Claims**

1. In combination,
a movable member,
a stationary member constructed to define a grid having magnetizable and non-magnetizable areas alternately disposed on an incremental basis in a particular direction,
first means disposed on the movable member and cooperative with the magnetizable and non-magnetizable areas for producing a movement of the movable member relative to the stationary member in the particular direction on an incremental basis, and
second means responsive to each movement of the movable member relative to the stationary member on the incremental basis for introducing to the first means an alternating signal having a relatively high frequency and a decaying amplitude to minimize errors from hysteresis effects

on the movement of the movable member relative to the stationary member.

9. In combination,

a movable member having a plurality of spaced poles each defining a grid of equally spaced magnetizable and non-magnetizable zones in a particular direction,

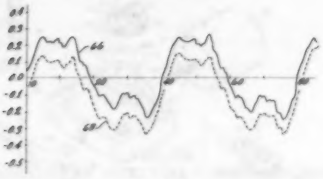
a stationary member disposed in contiguous relationship to the movable member and having a grid of equally spaced magnetizable and non-magnetizable zones in the particular direction corresponding to the magnetizable and non-magnetizable zones on the movable member,

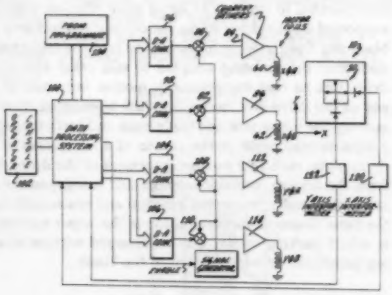
the spaced poles on the movable member being disposed in pairs, each pole in the pair being displaced by an effective distance equal to the width of each zone and the poles in each pair being displaced from the poles in the other pair by a distance equal to one half of the width of each zone,

a pair of windings each associated with the poles in a particular one of the pairs,

means associated with the poles in each pair for producing fluxes of opposite polarities in each pole in each pair relative to the other pole in the pair,

first means associated with the pair of windings for introducing alternating signals to each winding in a phase relationship of 90° relative to the phase in the other winding and having the phase in one of the signals leading or lagging the phase in the other signal in accordance with the vector of movement of the movable member relative to the stationary member in the particular direction, and





second means associated with the pair of windings for introducing to each winding a signal representing a correction in the position of the movable member relative to the stationary member at each instant in accordance with the disposition of the movable member relative to the stationary member in the particular direction at that instant,

the first means including means for introducing to the windings alternating signals with characteristics to obtain movements of the movable member relative to the stationary member on an incremental basis and

third means being associated with the pair of windings for introducing signals to the windings to compensate for hysteresis effects in the magnetizable zones in the first and second members,

the first means introducing the alternating signals to the windings at a relatively low frequency and the third means introducing to the windings, near the end of each incremental movement of the movable member relative to the stationary member, signals having a relatively high frequency and having a decaying amplitude.

4,455,513

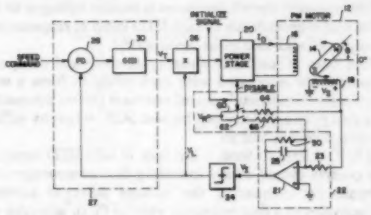
SELF-STARTING TRANSDUCERLESS, BRUSHLESS D.C. MOTOR CONTROLLER

Donald E. Fulton, Stoneham; William P. Curtiss, Winthrop, and William T. Fejes, Jr., Needham, all of Mass., assignors to Imec Corporation, Boston, Mass.

Filed Jul. 26, 1982, Ser. No. 401,420

Int. Cl.³ H02K *29/00*; H02P *7/00*

U.S. Cl. 318—138 **24 Claims**



1. A self-starting brushless permanent magnet motor, comprising:

first and second windings;

a magnetic member, the windings and the magnetic member being rotatable about an axis relative to each other;

means for defining an initialization period prior to operation of the motor;

means for rotating the magnetic member to a predetermined position during the initialization period;

means for integrating an input signal applied thereto to provide an output signal;

means for initializing the integrating means during the initialization period such that the integrating means output signal represents the flux coupling the magnetic member to the first winding when the magnetic member is at said predetermined position;

means, operative after the initialization period, for applying to the integrating means input a signal produced in the first winding by the magnetic flux coupling the magnetic member and the first winding, so that the integrator output signal is representative of the position of the rotor with respect to the windings; and

means, responsive to the integrating means output signal, for sending a drive current through the second winding to produce a torque on the magnetic member, the drive current being determined as a function of the integrator output signal while the motor is operating, thereby to provide closed-loop starting and operation of the permanent magnet motor.

17. A method for providing a self-starting permanent magnet motor having first and second windings and a magnetic member, the windings and the magnetic member being rotatable about an axis relative to each other, the method comprising the steps of:

providing a first signal representative of the magnetic field coupling the magnetic member and the first winding;

rotating the magnetic member to a predetermined position during an initialization period prior to operation of the motor;

initializing an integrator during the initialization period so that the integrator output signal represents the flux coupling the magnetic member to the first winding when the magnetic member is at said predetermined position;

integrating the first signal with the integrator during motor operation to provide an integrator output signal represen-

tative of the position of the magnetic member relative to the windings; and

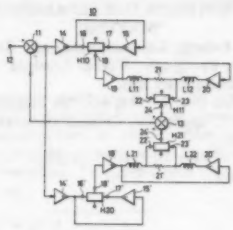
applying a drive current to the second winding to provide a magnetic field therefrom for producing a torque on the magnetic member, the drive current being a function of the integrator output signal and being applied to the second winding during motor operation, thereby to provide closed-loop starting and operation of the motor.

4,455,514

CONTROL CIRCUIT FOR A BRUSHLESS DC MOTOR

Hirotoshi Ohno, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Apr. 20, 1982, Ser. No. 370,246
Claims priority, application Japan, Apr. 21, 1981, 56-59951
Int. Cl.³ H02K *29/00*
U.S. Cl. 318—254 **13 Claims**



1. A method of operating a brushless DC motor in response to a control signal, the motor including a rotor having a series of magnetic poles arranged to have alternating magnetic fields of opposite polarities and a stator having a plurality of armature windings, comprising the steps of:

sequentially generating in said windings a current variable as a function of said control signal and as a function of the angular position of the rotor with respect to each of said windings;

detecting the strength of a magnetic field linked with each of the armature windings and the magnitude of the current generated in each of the windings;

multiplying the detected field strength of each winding by the detected current magnitude of each winding to generate a torque representing a compensation signal for each of said windings; and

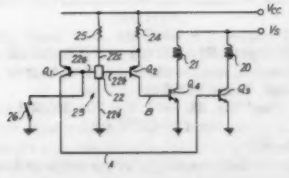
correcting said control signal with said compensation signal.

4,455,515

CONTROL CIRCUIT OF BRUSHLESS DC MOTOR

Mitsuo Uzuka, Urawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 1, 1982, Ser. No. 383,959
Claims priority, application Japan, Jun. 12, 1981, 56-90314
Int. Cl.³ H02K *29/00*
U.S. Cl. 318—254 **11 Claims**



1. A control circuit for driving and instantanously stopping rotary motion in a brushless DC motor of the kind including a rotor rotatable about an axis and having flux generating means for generating magnetic flux of alternating magnetic field polarity in a rotary path about said axis, and a stator coaxial with said rotor and having a plurality of coil means of respective phases in linking relation to said magnetic flux and adapted to be energized for current to flow therethrough and produce a rotational torque to continuously rotate the motor, said control circuit comprising:

a plurality of switching elements connected with said coil means of respective phases and adapted to be selectively made operative, in response to respective switching signals, for energizing said coil means of respective phases;

a switching signal generating circuit normally responsive to the rotational position of said rotor for changing its condition and thereby providing said switching signals to said switching elements;

a power supply having terminals at ground potential and at an elevated potential in respect thereto; and

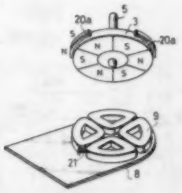
additional switching means connected to said power supply and to said switching signal generating circuit and being actuable to connect said switching signal generating circuit to one of said terminals to provide a clamping voltage to fix said condition of the switching signal generating circuit so that only one of said switching elements is made operative for energizing only the respective coil means and thereby locking said rotor against rotation about said axis.

4,455,516

BRUSHLESS MOTOR

Hidetaka Furusho, Kakuda, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 431,061
Claims priority, application Japan, Dec. 18, 1981, 56-188043[U]
Int. Cl.³ H02P *5/06*
U.S. Cl. 318—254 **4 Claims**



1. A brushless D.C. motor comprising:

(a) a ring-shaped driving magnet magnetized to develop N and S poles alternately and having a peripheral rim surface;

(b) a rotory yoke extending over the driving magnet and having a plurality of flanges extending from the outer peripheral edge thereof to the mid portion of the peripheral rim surface of said driving magnet, said flanges extending over two adjacent magnetic poles of different polarities at the boundary between these magnetic poles; and

(c) a magnetic-electric transducer element disposed adjacent to the lower portion of the peripheral rim surface of said driving magnet.

4,455,517

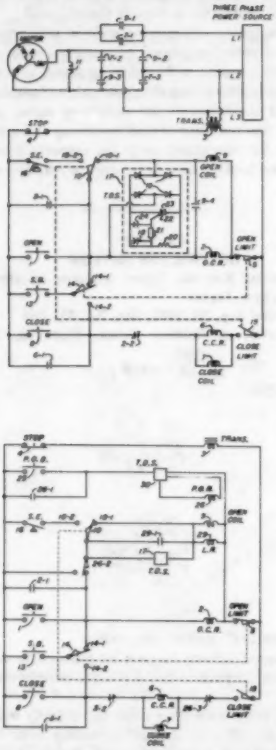
DOOR ACTIVATING CONTROL CIRCUITRY

Donald A. Mitchell, R.R. 2, 17A Robin Hill Apts., Hampton, N.J. 08827

Filed Sep. 27, 1982, Ser. No. 424,470
Int. Cl.³ H02P *1/08*
U.S. Cl. 318—283 **4 Claims**

1. In combination in door activating and control apparatus,

a power source, a normally closed stop button, a normally open door opening direction button, an open direction control relay coil and a normally closed open direction limit switch all serially connected, an off-on AC time delay switch consisting of a rectifier and resistor-capacitor network, serially connected to an open direction relay coil, said time delay switch and said open direction relay coil both connected in parallel to said open direction control relay coil, said time delay switch to delay energization of said open direction relay coil approximately one second after said open direction control relay coil has been energized, said open direction control relay first set of normally open self-latching contacts connected in parallel with said door opening direction button, said open direction control relay second set of normally closed contacts, a normally open door closing direction button, a close direction control relay coil and a normally closed close direction limit switch all



serially connected, said close direction control relay normally open self-latching contacts connected in parallel with said close direction button, a close direction relay coil connected in parallel with said close direction control relay coil, said open direction control relay second set of normally closed contacts will open when said open direction control relay coil is energized to prevent said close direction control relay coil and said close direction relay coil from becoming energized if said close direction button is activated, a first transfer switch means having a common member and first and second terminals, said common member connected to said open direction button and said open direction control relay coil, said transfer switch first normally open terminal, which is held closed when the door is in the fully closed position, connected to said open direction relay coil to selectively energize said open direction relay coil by providing an electrical path to circumvent said off-on time delay switch when the door is in the fully closed position, said open direction relay one set of normally open self-latching contacts connected in parallel with said first transfer switch normally open terminal in order to continue energization of said open direction relay coil when said first transfer switch normally open terminal returns to its normally open position as the door starts to move towards its open position, a normally open safety edge sensor switch means connected to said first transfer switch second normally closed terminal placing said safety edge sensor switch in parallel with said open direction button and in series with said open direction control relay coil and said normally closed open direction limit switch, said first transfer switch to selectively defeat said safety edge sensor switch when the door is in the near closed position at which time said first transfer switch normally closed terminal is held open.

4,455,518

CONTROL PROVISION FOR SEPARATING PRINTED MATTER

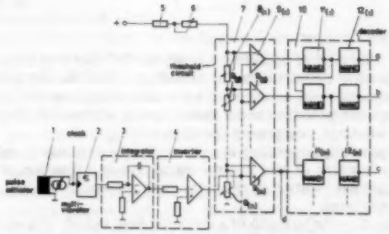
Claus Drehobl, Leipzig, German Democratic Rep., assignor to Veb Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Filed Dec. 7, 1981, Ser. No. 328,096

Claims priority, application German Democratic Rep., Dec. 12, 1980, 225989

Int. Cl.³ G05D *23/275*

U.S. Cl. 318—632 **8 Claims**



1. Control provision for the separation of printed material movable at a transport speed past a distributing guide, comprising

servo components for operating the distributing guide;

an initiator providing electrical pulses proportional to the transport speed;

a compensation circuit connected to the initiator for transforming the pulses into signals depending on the pulses and providing compensation time information relating to the fall delay time and the operating delay time of the servo components;

coupling elements connected to the compensation circuit; and

selection circuit connected to the coupling elements and to the servo components.

4,455,519

TORQUE RECEIVER CONTROLLER

Thomas J. Scanlon, and Gerald P. Scanlon, both of 299 Union St., Randolph, Mass. 02368

Filed Sep. 28, 1981, Ser. No. 306,083

Int. Cl.³ G05B *1/06*

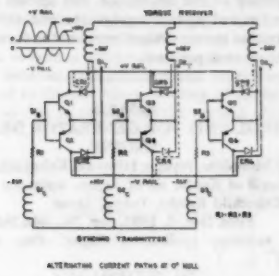
U.S. Cl. 318—654 **13 Claims**

1. A device for self-torquing a torque receiver having stator windings to a null position with respect to a three-phase input signal representative of the position of a control transmitter, such device comprising:

a power source, derived from the stator signals of the torque

receiver, having a high potential and a low potential terminal;

a comparator means, connected to the three-phase input signal and to the torque receiver stator windings, for comparing the voltage on each stator winding with the corresponding input signal of the control transmitter; and



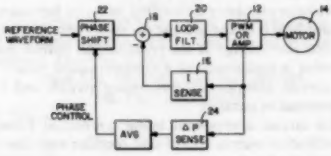
a driver means, in communication with the power source and with the comparator means, for selectively connecting, at a given instant, the torque receiver stator winding having the greatest output voltage amplitude, to the other two stator windings for driving said torque receiver to a null position.

4,455,520

METHOD AND MEANS FOR STABLE OPERATION OF A SYNCHRONOUS MOTOR

Kenneth C. Ward, Tiburon, and Ross Welburn, Santa Rosa, both of Calif., assignors to Compumotor Corporation, Petaluma, Calif.

Filed May 29, 1981, Ser. No. 268,281
Int. Cl.³ H02K *29/02*
U.S. Cl. 318—696 **8 Claims**



1. The method of driving a synchronous motor and avoiding parametric resonance comprising the steps of applying a modulated current to the windings of said motor, monitoring power to said motor, and varying the phase of said modulated current to offset changes in power.

4,455,521

ENERGY SAVER CONTROL FOR SINGLE PHASE MOTORS

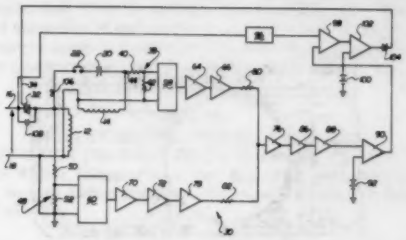
Alvin L. Day, Ames, Iowa, and Howard E. Jordan, Euclid, Ohio, assignors to Reliance Electric Company, Cleveland, Ohio

Filed Jun. 12, 1981, Ser. No. 272,915
Int. Cl.³ H02P *7/36*
U.S. Cl. 318—798 **16 Claims**

1. A motor circuit comprising in combination, a single phase motor having a main winding and a starting winding, a pair of input terminals, said main winding and said starting winding connected to said input terminals, and capacitor means connected in electrical series with said starting winding to said input terminals;

switching means in electrical series with one of said main and starting windings for controlling electrical power directed thereto, said switching means having an actuation terminal; and

control means for providing a signal to said actuation terminal of said switching means, said control means including first sensor means for providing a first signal proportional



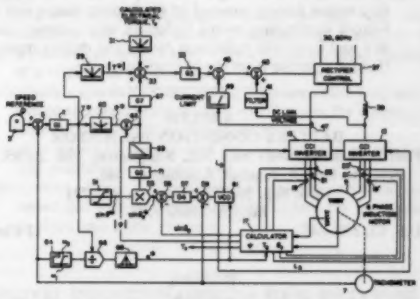
to a voltage applied to said starting winding, second sensor means for providing a second signal proportional to a voltage applied to said main winding, said control means combining said first and second signals to provide said signal to said actuation terminal upon the occurrence of a predetermined combination of first and second signals.

4,455,522

CURRENT SOURCE INVERTER BED INDUCTION MOTOR DRIVE

Thomas A. Lipo, Madison, Wis., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 2, 1982, Ser. No. 404,252
Int. Cl.³ H02P *5/40*
U.S. Cl. 318—809 **4 Claims**



1. A drive system for extending the range of high frequency operation of a polyphase induction motor comprising:

a first and second current source inverter connected to the polyphase motor for supplying power thereto;

means for determining motor speed;

means for determining the torque the motor is supplying to the load;

first means responsive to increasing speeds and decreasing motor torque for generating a command for advancing the firing of pulses of one inverter while delaying the firing of pulses of the other inverter by the same amount;

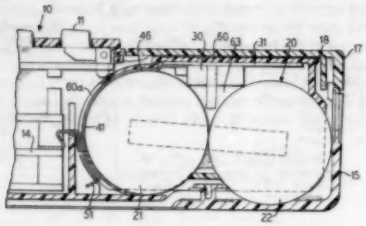
second means for generating a frequency command signal for said motor; and

means responsive to said first and second commands for generating firing pulses at the commanded frequency to said inverters to advance the firing of pulses of one inverter while delaying the firing of pulses of the other inverter, so as to increase the current flowing in each inverter.

4,455,523
PORTABLE BATTERY POWERED SYSTEM

Steven E. Koenck, Cedar Rapids, Iowa, assignor to Norand Corporation, Cedar Rapids, Iowa

Filed Jun. 7, 1982, Ser. No. 385,830
Int. Cl.³ H02J 7/00
U.S. Cl. 320—43 **43 Claims**

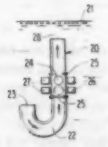


9. In a portable battery powered system,
a portable battery powered utilization device for operating from battery power during portable operation thereof,
battery means operatively coupled with said utilization device for supplying operating power thereto, and
battery monitoring means operatively coupled with said battery means for monitoring battery parameters,
said utilization device together with said battery means and said battery monitoring means having a size and weight to be carried by an individual person, and
said battery monitoring means comprising battery parameter sensing means for sensing battery parameters and comprising memory means operatively coupled with said battery parameter sensing means and operative for storing data based on said battery parameters,
said memory means being electrically powered by said battery means during removal of the battery means and said battery monitoring means including said memory means as a unit from said utilization device and during transport thereof separate from the utilization device.

4,455,524
BATTERY CONDITION INDICATOR

Paul A. Kendall, 4615 Saul Rd., Kensington, Md. 20795, assignor to Paul A. Kendall, Kensington, Md.

Filed Sep. 30, 1982, Ser. No. 431,721
Int. Cl.³ H02J 7/00
U.S. Cl. 320—48 **12 Claims**

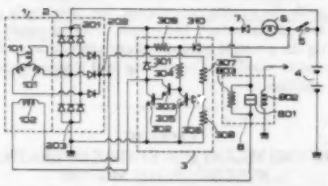


1. A battery condition indicator comprising a body having a substantially vertical passage at least a lateral passage near the lower end of the vertical passage communicating with the vertical passage and having a substantially upwardly opening inlet at an elevation above the point of communication of the lateral passage with the vertical passage, said vertical passage having an upper circulating opening below the level of the battery electrolyte, whereby battery electrolyte can continuously enter the lateral passage and continuously flow upwardly during charging through the vertical passage and out of the upper circulating opening due to differential pressure between the inlet and the upper circulating opening, maintaining both passages filled while electrolyte bubbles are barred from entering the lateral passage, and at least a movable element within said vertical passage submerged in battery electrolyte flowing continuously in the vertical passage and having a predetermined specific gravity whereby the element is buoyant or sunk in the vertical passage responsive to minute variations in the specific gravity of the electrolyte, and spaced stop elements within the vertical passage engageable with the movable element to position the movable element in the vertical passage in its buoyant or sunk positions.

4,455,525
CONTROL UNIT FOR GENERATOR DRIVEN BY ENGINE

Mitsuharu Morishita, Hyogo; Hiroyuki Kobayashi, and Toyoaki Fukui, both of Kyoto, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 3, 1982, Ser. No. 446,764
Claims priority, application Japan, Dec. 4, 1981, 56-180719[U]
Int. Cl.³ H02J 7/14
U.S. Cl. 322—28 **3 Claims**



1. A control unit for a generator driven by an engine in which the number of cylinders to be operated is selectively controlled including a field coil for the generator supplied with controlled field current and a rectifier for rectifying AC output of the armature of the generator to convert the AC output into DC output, said control unit comprising:
(a) a voltage regulator connected in series between one end of said field coil and ground for switching the field current so that the voltage at the rectification output end of said rectifier is maintained at a predetermined value;
(b) a circuit component comprising switch and a resistor connected in parallel;
(c) said circuit component being connected between said rectification output end of said rectifier and the other end of said field coil; and
(d) means responsive to a control signal indicative of reduction of the number of cylinders to be operated for opening said switch to cause said field current to be limited by said resistor.

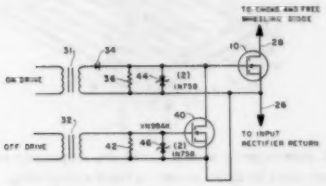
4,455,526
FET SWITCHING REGULATOR

Daniel G. Miller, Randallstown, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 29, 1982, Ser. No. 393,265
Int. Cl.³ G05F 1/56
U.S. Cl. 323—282 **8 Claims**

1. A drive circuit for a system using pulse width modulation of a least one field effect transistor which has a source, a gate and a drain, in which the system includes a modulator coupled via said drive circuit to an input between the gate and source, the modulator providing repetitive cycles with variable on and off intervals indicated by discrete on and off levels at a modulator output, said transistor having a gate capacitance which is the internal gate-to-source capacitance;
wherein said drive circuit comprises first and second trans-

formers each having a primary and a secondary winding, the secondary winding of the first transformer having one terminal coupled to said gate and another terminal coupled to said source, with a diode in series directly between said one terminal and the gate, said diode being the only significant circuit element connected between said one terminal and the gate, so that an on-drive pulse applied via the first transformer charges said gate capacitance to bias said field effect transistor on, the charge being held by the diode; a switching device having an output connected directly between said gate and said source and an input connected to the secondary winding of the second transformer, so that an off-drive pulse applied via the second



transformer turns on said switching device to thereby discharge said gate capacitance to bias the field effect transistor off:

transformer drive means coupled between said modulator output and said first and second transformer primary winding, including on-control means operative in response to a transition to said on level to apply a very short pulse to the primary winding of the first transformer to provide said on-drive pulse, and including off-control means operative in response to a transition to said off level to apply a very short pulse to the primary winding of the second transformer to provide said off-drive pulse, said very short pulses being substantially less than one microsecond.

4,455,527

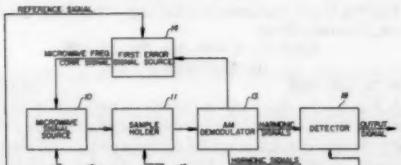
MAGNETIC RESONANCE APPARATUS

Leonard S. Singer, Berea, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 29, 1982, Ser. No. 393,391

Int. Cl.³ G01R *33/08*

U.S. Cl. 324—316 **4 Claims**



1. A magnetic resonance apparatus comprising; first means for producing a microwave signal having a microwave frequency; second means for holding a sample to be irradiated by said microwave signal; third means for producing in the region of the sample a magnetic field that is modulated with respect to a reference magnetic field level; said sample exhibiting a maximum resonance absorption at the reference magnetic field level and said microwave frequency; whereby said moduluated magnetic field causes the absorbance of said sample to vary in synchronism with the magnetic field modulation resulting in amplitude modulation of said microwave signal containing first and second harmonic signals with respect to the frequency of said modulated magnetic field; fourth means for demodulating said microwave signal to obtain said first and second harmonic signals; fifth means for producing a magnetic field correction signal from said first harmonic signal to change said reference magnetic field level to maintain said maximum microwave signal absorption of said sample at said microwave frequency; and output means for said second harmonic signal; whereby, the second harmonic signal provides a property of said sample.

4,455,528

OSCILLATOR COIL SENSING HEAD FOR CONTACTLESS INDUCTIVE PROXIMITY SWITCH

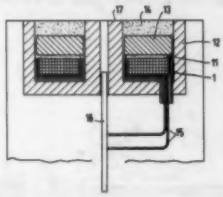
Heinz Walker, Kümmersbruck, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 20, 1981, Ser. No. 284,998

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1980, 3028939

Int. Cl.³ G01R *33/12*

U.S. Cl. 324—327 **2 Claims**



1. An oscillator circuit with a cup core sensing head, comprising:

oscillator coil means contained within the cup core, said oscillator coil means having a predetermined number of wire turns so as to occupy only a relatively small portion of a volume in the cup core;

oscillator capacitor means having a predetermined capacity and connected to said oscillator coil means for forming a resonant LC oscillator timing circuit;

washer means disposed within the cup core and outward of said oscillator coil means; and

integrated circuit means connected to said oscillator coil means and said oscillator capacitor means for producing an electronic phase reversal.

4,455,529

DIGITAL INDUCTION LOGGING TOOL INCLUDING MEANS FOR MEASURING PHASE QUADRATURE COMPONENTS IN A PHASE SENSITIVE DETECTOR

Paul L. Sinclair, Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Jun. 8, 1981, Ser. No. 271,278

Int. Cl.³ G01V *3/28, 3/34;* G01R *25/00;* E21B *47/12*

U.S. Cl. 324—339 **13 Claims**

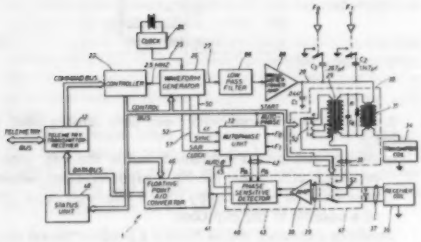
1. An induction logging system for measuring a characteristic of the earth's sub-surface formations by causing formation currents to flow in response to a transmitter signal of a predetermined frequency and by measuring a receiver signal generated in response to those formation currents, the system comprising:

(i) an induction logging tool suspended in the well borehole by a wireline cable for generating digital signals representative of phase quadrature components of the receiver signal at various depth points along the borehole, said tool comprising:

- a transmitter coil responsive to the transmitter signal for inducing a magnetic field into the sub-surface formations;

- a receiver coil for generating a receiver signal indicative of said characteristic of the formations;
- a controller responsive to command and data signals from the surface for controlling the internal timing and functional operations of the tool;
- a waveform generator responsive to said controller for generating a sinusoidal transmitter signal to said transmitter coil;
- a autophase unit responsive to said controller for generating a phase reference signal the phase of which alternately changes in response to commands from said controller form a first to a second phase relationship with the transmitter signal resulting in a first and a second phase reference signal where the first and second phase reference signals are in quadrature one to the other;
- phase sensing means responsive to the receiver signal and the phase reference signal for successively detecting the phase quadrature components of the receiver signal where each detected component is that component in-phase with the phase reference signal
- selecting means responsive to said controller for selecting either the receiver signal or a test signal representative of the transmitter signal as the signal to be applied to said phase sensing means, said selecting means selecting the test signal during a phase compensation cycle,
- said phase sensing means generating a phase error signal to said autophase unit indicative of the magnitude of the detected component signal output by said phase sensing means;
- said autophase unit including means responsive to the phase error signal for phase shifting the phase reference signal in a direction to reduce the output signal from said phase sensing means thereby compensating for phase shift error introduced by circuits of the tool, the phase reference signal generated during a phase compensation cycle being in phase quadrature with the selected test signal from said selecting means and
- an analog-to-digital convertor responsive to the output of said phase sensing means and to said controller for successively obtaining digital samples of the magnitude of the phase quadrature components of the receiver signal; and

(ii) surface processing means connected to the wireline cable for producing the characteristic data of the sub-surface formations from said digital samples and for sending command and data signals to said controller via the cable.

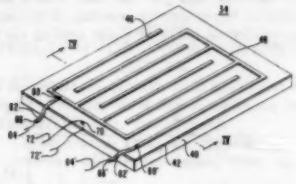


4,455,530

CONDUCTIVITY SENSOR FOR USE IN STEAM TURBINES

Pang-Kai Lee, Murrysville; William M. Hickam, Churchill, and William T. Lindsay, Jr., Hempfield Township, Westmoreland County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 30, 1982, Ser. No. 363,757
Int. Cl.[3] G01N *27/02*
U.S. Cl. 324—446 14 Claims



1. A conductivity sensor for in situ measuring of impurities in steam used to drive steam turbines comprising:

(A) a base mountable on a portion of said turbine directly in the steam path;

(B) said base being comprised of a relatively flexible metal foil so as to conform to a curvilinear surface of a turbine part in the steam path;

(C) an electrically insulating layer disposed over a surface of said metal foil base and having a thickness so as to be relatively flexible after application to said base;

(D) a metallic electrode array on said insulating layer and having a thickness so as to allow flexing with said insulating layer and base;

(F) said electrode array being exposed to and being non-corrodible in said steam;

(G) said electrode array being of sufficient thickness and electrodes of said array being spaced from one another at a distance to allow deposition of steam impurities between said electrodes to establish an electrically conducting path therebetween.

4,455,531

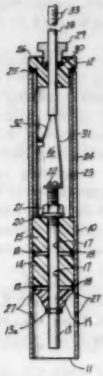
CONDUCTANCE PROBE FOR DETECTION OF IMMISCIBLE LIQUIDS

Orlan M. Arnold, Norwalk, Conn., assignor to First Taxing District, Water Department of the City of Norwalk, Connecticut, Norwalk, Conn.

Filed Jul. 6, 1981, Ser. No. 280,935
Int. Cl.[3] G01N *27/02*
U.S. Cl. 324—448 10 Claims

1. A probe for detecting immiscible components in an aqueous system which comprises a casing having an open bottom and a closed top, a first electrical terminal and second electrical terminal spaced from each other inside the casing adjacent the open bottom, a sealed chamber between the first electrical terminal and closed top, means between said first electrical terminal and sealed chamber to seal said chamber from water, means within said casing for retaining said sealing means, means to support the terminals in the casing, means remote from the casing for detecting change in electrical characteristics, a first electrical connecting means connecting said remote means to said first electrical terminal and second electrical connecting means connecting said remote means to said second electrical terminal, means in said casing adjacent said first electrical terminal including a plurality of apertures in the casing to provide a continuous flow of fluid adjacent said first electrical terminal, means having an upwardly sloping surface within said casing adjacent said apertures between said first and second electrical terminals, whereby said remote means

registers electrical characteristics when said casing is immersed in water and a variation in said characteristics registers

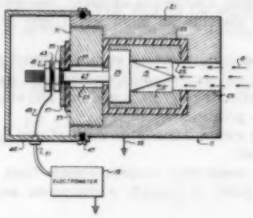


on said remote means when said casing passes through a dissimilar fluid.

4,455,532
APPARATUS FOR MEASURING CHARGED PARTICLE BEAM

Don A. Gregory, and Charles D. Stocks, both of Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 26, 1982, Ser. No. 342,857
Int. Cl.³ G01R *29/12*
U.S. Cl. 324—457 **6 Claims**



1. An apparatus for measuring incident charge particle beam flux, comprising:

a sense cup adapted to absorb and conduct incident charge particles of the beam flux;

said sense cup having a cylindrical interior chamber with a closed bottom and a front entry passageway for said charged particle beam to enter the interior chamber;

said sense cup having a sense cone forming the bottom of the interior chamber which is opposite the entry passageway and extending forward with its cone apex toward and adjacent said entry passageway, the bottom diameter of the sense cone corresponding to the diameter of the interior cylindrical chamber so the cone forms the entire bottom surface of the interior chamber, said sense cup and cone contacting each other so as to conduct therebetween the absorbed charged particles from said incident charge particle beam flux;

an electrical current measuring means for measuring the absorbed charged particles of said sense cup and said sense cone;

an outer case with an interior chamber;

said sense cup fitted within the interior chamber of said outer case;

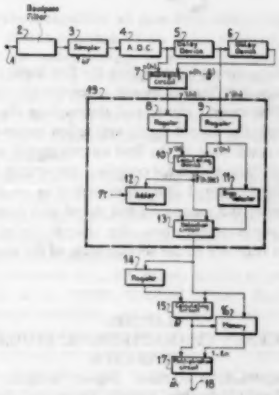
said outer case having an entry passageway for the charged particle beam to be measured which entry passageway is axially aligned with the entry passageway of said sense cup; and

electrical insulation between said outer case and said sense cup.

4,455,533
PROCESS FOR DEMODULATING A FREQUENCY-MODULATED SIGNAL AND DEMODULATORS USING THIS PROCESS

Jean Y. Moraillon, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Aug. 7, 1981, Ser. No. 290,960
Claims priority, application France, Aug. 13, 1980, 80 17840
Int. Cl.³ H03D *3/00*
U.S. Cl. 329—126 **4 Claims**



1. A process for demodulating a frequency-modulated signal comprising: sampling the signal at a frequency 4F′ (F′ being a frequency of the frequency band of the signal to be demodulated); determining an approximate value $\hat{\theta}(t)$ by calculating the arc tangent $\theta'(t)$ of the ratio $R=(y'(t)/x'(t))$ between a value $x'(t)$ of a sample of the signal and an arithmetic average value $y'(t)$ of the values $x'(t+(1/4F'))$ and $x'(t-(1/4F'))$ corresponding respectively to the signal sample preceding $x'(t)$ and to the sample following $x'(t)$; determining a first estimation $\hat{\Delta}F$ of the frequency variation between two sampling times t_1, t_2, separated by $(1/F')$, by calculating

$$\hat{\Delta}F = \frac{F'}{2\pi}\left[\theta'(t_1) - \hat{\theta}'(t_2)\right];$$

and producing a demodulated signal from the value $\hat{\Delta}F$.

4,455,534
MULTI-STATE CONTROL CIRCUITRY

Steven F. Gillig, Carol Stream, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

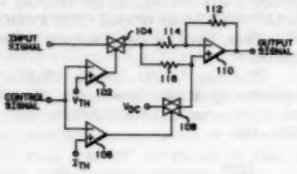
Filed Oct. 30, 1981, Ser. No. 316,619
Int. Cl.³ H03F *1/14*
U.S. Cl. 330—51 **17 Claims**

1. Circuitry for controlling the application of one of first and second input signals from corresponding first and second signal sources to output signal utilization means, comprising:

signal source means for providing a control signal having one of first and second predetermined voltages and one of first and second predetermined currents;

voltage detecting means coupled to the control signal source means for generating a first state of a first output signal when the control signal has said first predetermined voltage and a second state of the first output signal when the control signal has said second predetermined voltage;

current detecting means coupled to the control signal source means for generating a first state of a second output signal when the control signal has said first predetermined current and a second state of the second output signal when the control signal has said second predetermined current;



first switching means for coupling the first input signal to the output signal utilization means in response to the first state of the first output signal and decoupling the first input signal from the output signal utilization means in response to the second state of the first output signal; and

second switching means for coupling the second input signal to the output signal utilization means in response to the first state of the second output signal and decoupling the second input signal from the output signal utilization means in response to the second state of the second output signal.

4,455,535

FREQUENCY CHARACTERISTIC ADJUSTING APPARATUS

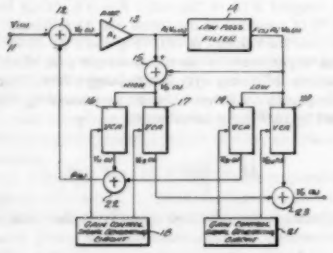
Tsutomu Sugawara, Yokosuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Sep. 11, 1981, Ser. No. 301,436

Claims priority, application Japan, Sep. 29, 1980, 55-135513

Int. Cl.³ H03F *3/68*; H03G *3/30*

U.S. Cl. 330—126 **9 Claims**



1. A frequency characteristic adjusting apparatus comprising:

an amplifier for amplifying an input signal having a predetermined amplitude to produce an output signal;

frequency band dividing means, coupled to said amplifier, for dividing the output signal from said amplifier into first and second frequency bands;

first and second gain control means for controlling the gain of said first frequency band signal from said frequency band dividing means, respectively;

third and fourth gain control means for controlling the gain of said second frequency band signal from said frequency band dividing means, respectively;

first adder means for adding together the output signals from said first and third gain control means and then negatively feeding the added signal back to the input of said amplifier;

second adder means for adding together the output signals from said second and fourth gain control means; and

means for generating and supplying a gain control signal to either said first and second gain control means or said third and fourth gain control means, said pair of gain control means receiving the gain control signal from said gain control signal generating means being controlled such that when the gain of one of said gain control means increases, the gain of the other decreases as controlled by the signal from said gain control signal generating means.

4,455,536

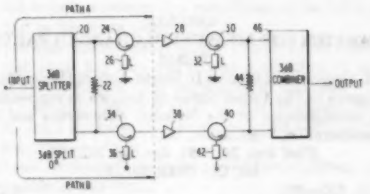
PUSH-PULL MICROWAVE AMPLIFIER

Ronald E. Stegens, Brookeville, Md., assignor to International Telecommunications Satellite Organization (INTELSAT), Washington, D.C.

Filed Jan. 21, 1982, Ser. No. 341,353

Int. Cl.³ H03F *3/60, 3/26*

U.S. Cl. 330—286 **19 Claims**



1. A push-pull microwave amplifier comprising:

means for dividing an input signal into first and second paths;

first and second reflecting means disposed respectively in said first and second paths, said first and second reflecting means reflecting signals in said first and second paths with opposite polarities;

amplifying means disposed in each of said first and second paths; and

means for combining outputs signals from said first and second paths to provide a composite amplified output signal.

4,455,537

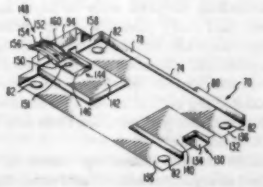
MICROWAVE CIRCUIT INTERCONNECT SYSTEM

James N. La Prade, Dayton, and Raymond S. Wondowski, Plainsboro, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 6, 1981, Ser. No. 280,919

Int. Cl.³ H01P *5/00*

U.S. Cl. 333—33 **11 Claims**



1. In a planar microwave circuit system including at least

two subsystems, each subsystem including an electrically conductive circuit support structure, a dielectric substrate secured to the support structure, said substrate having first and second plane surfaces, the first of said surfaces being adapted to receive circuit components thereon, the second surface including planar conductor means forming a planar circuit ground plane, said ground plane being ohmically connected to said support structure, said system including connector means bridging the two subsystems including one conductor ohmically connecting said circuit components of the first surface of the two subsystems, and another conductor ohmically connecting the ground planes on the second surface of the two subsystems, the improvement comprising:

at least one electrically conductive contact receiving surface on one of said support structures ohmically connected to the ground plane on one substrate; and

said another conductor comprising a resilient spring contact element on the other support structure ohmically connected to the ground plane on the other substrate and positioned to slidably, resiliently and releasably engage said contact receiving surface when the two support structures are closely adjacent one another, whereby, when so positioned, said spring contact element on one subsystem ohmically slidably, releasably engages the contact receiving surface on the adjacent subsystem support structure, to form an electrically continuous ground plane for the two subsystem circuits with negligible impedance at the connections between the two ground planes, and the parameters including size and spacing between the two conductors of the connector means being such that the connector means matches the impedance of the two subsystems it interconnects.

4,455,538

SUBASSEMBLY, IN PARTICULAR A CHOKE AND A FILTER FOR RADIO INTERFERENCE CONTROL

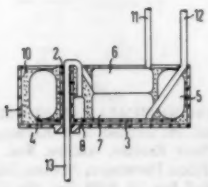
Hans Kinzler, Regensburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 29, 1982, Ser. No. 402,848

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1981, 3133644

Int. Cl.³ H03H *1/00, 7/01*

U.S. Cl. 333—167 **6 Claims**



1. Subassembly for electrical components with connecting leads, comprising a cup-shaped metal housing, a metallic cover closing said metal housing and having a perforation formed therein, an insulating material cup being disposed in said metal housing and having an outer cup bottom being turned toward said cover, a chimney-like projection formed inside the bottom of said insulating material cup in alignment with said perforation in said cover, said projection forming a tunnel-like feed through for connecting leads of components extending out of the subassembly, and an electrical circuit plate for carrying components, said plate being pushed onto said projection at perforations formed in said plate.

4,455,539

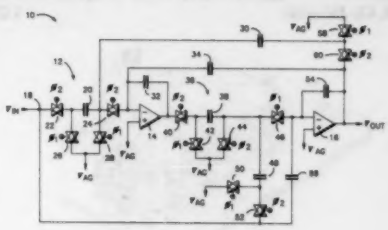
SWITCHED CAPACITOR ALL PASS FILTER

Henry Wurzburg, Round Rock, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 13, 1982, Ser. No. 407,684

Int. Cl.³ H03H *19/00, 11/12*

U.S. Cl. 333—173 **10 Claims**



1. A switched capacitor all pass filter comprising:

an input means coupled to an input terminal adapted to receive an analog voltage to be filtered, said input means comprising a first switched capacitor means;

a first integrating operational amplifier having a first input terminal adapted to receive a reference voltage source, a second input terminal coupled to said input means, and an output terminal;

a first feedback means comprising a first capacitor having a first electrode coupled to the second input terminal of said first integrating operational amplifier, and a second electrode coupled to the output terminal of said first integrating operational amplifier;

a second switched capacitor means having an input terminal coupled to the output terminal of said first integrating operational amplifier, and an output terminal;

a second integrating operational amplifier having a first input terminal adapted to receive said reference voltage source, a second input terminal coupled to the output terminal of said second switched capacitor means, and an output terminal for providing a filtered output signal;

a second feedback means comprising a second capacitor having a first electrode coupled to the inverting input terminal of said second integrating operational amplifier, and a second electrode coupled to the output terminal of said second integrating operational amplifier;

a third feedback means comprising a third capacitor having a first electrode coupled to the inverting input of said first integrating operational amplifier, and a second electrode coupled to the output of said second integrating operational amplifier;

a fourth feedback means comprising a fourth capacitor having a first electrode coupled to said first switched capacitor means, and a second electrode alternately coupled between said reference voltage source and the output terminal of said second integrating operational amplifier;

a fifth feedback means comprising a fifth capacitor having a first electrode coupled to said second switched capacitor means, and a second electrode alternately coupled between said reference voltage source and said input terminal;

a sixth feedback means comprising a sixth capacitor having a first electrode coupled to said input terminal, and a second electrode coupled to the inverting input terminal of said second integrating operational amplifier;

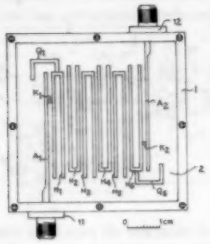
wherein the voltage from said input terminal is converted to a sampled data signal and an output voltage which contains all frequency components of the input voltage and which has a predetermined phase response for all frequencies is provided.

4,455,540

BAND PASS FILTER WITH LINEAR RESONATORS OPEN AT BOTH THEIR EXTREMITIES

Marie C. Henriot, and Patrick Janer, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jul. 21, 1982, Ser. No. 400,488
Claims priority, application France, Jul. 24, 1981, 81 14426
Int. Cl.³ H01P 1/203, 7/08
U.S. Cl. 333—202 4 Claims



1. A filter having a band pass region whose mean wavelength is λ and a band cut out for eliminating a frequency λ', said filter comprising:

n main linear resonators wherein n is a positive integer at least equal to one and wherein each of said main linear resonators having a length equal to λ/2 and having two open extremities and a middle with said middle being at a location on said linear resonator where the electric field has a minimum value;

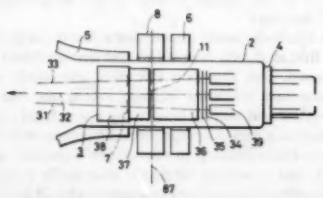
p auxiliary linear resonators wherein p is a positive integer at least equal to one and at most equal to n each having a length equal to one of λ'/2 and λ'/4 and each of said auxiliary linear resonators having two extremities and a middle with at least one of said extremities of said auxiliary resonators being open wherein said p auxiliary resonators are respectively connected to the middle of p of said main linear resonators.

4,455,541

COLOR CATHODE RAY TUBE DEVICE

Eisho Nosaka, Kyoto, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 17, 1982, Ser. No. 408,999
Claims priority, application Japan, Aug. 18, 1981, 56-129707
Int. Cl.³ H01F 7/00
U.S. Cl. 335—210 5 Claims



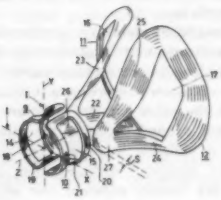
1. A color cathode ray tube device of the in-line type, comprising; a deflection yoke, a static convergence component and a dynamic convergence component, said dynamic convergence component being disposed with a center plane of a main electron gap, which is orthogonal to an axis of the cathode ray tube, and said plane being within a range of 3d along said axis on either side of a center point defined by the center of a main electron lens gap d located in a region between said deflection yoke and said static convergence component.

4,455,542

DEVICE FOR DISPLAYING TELEVISION PICTURES INCLUDING A DEFLECTION UNIT THEREFOR

Albertus A. S. Sluijterman, and Nicolaas G. Vink, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 4, 1983, Ser. No. 471,973
Claims priority, application Netherlands, Jan. 6, 1983, 8300032
Int. Cl.³ H01H 5/00
U.S. Cl. 335—213 8 Claims



1. A device for displaying television pictures comprising a display tube in the neck of which an electron gun system is present for emitting at least one electron beam towards a display screen, and an electromagnetic deflection unit which is provided around the envelope of the display tube which comprises: a first deflection coil, and a second deflection coil situated coaxially with respect to the first deflection coil, each deflection coil comprising two diametrically oppositely located coil units, each coil unit of the first deflection coil consisting of two sub-coil units which are arranged axially with respect to each other on the side of the gun system and display screen, the sub-coil units which are present on the side of the gun system having a winding distribution for generating a dipole deflection field in combination with a positive sixpole deflection field, and the sub-coil units which are present on the side of the display screen having a winding distribution for generating a dipole field in combination with a negative sixpole field on their sides which are remote from the display screen, and a positive sixpole field on ther sides facing the display screen.

4,455,543

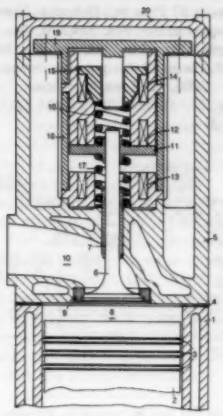
ELECTROMAGNETICALLY OPERATING ACTUATOR

Franz Pischinger, Im Erkfeld, 5100 Aachen, Fed. Rep. of Germany, and Peter Kreuter, Aachen, Fed. Rep. of Germany, assignors to Franz Pischinger, Aachen, Fed. Rep. of Germany

Filed Jun. 29, 1981, Ser. No. 278,393
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024109
Int. Cl.³ H01F 7/08
U.S. Cl. 335—266 11 Claims

1. An electromagnetically operating actuator for a control element capable of making oscillatory movements in a displacement machine, more particularly for flat slide shut-off valves and lift valves, comprising a spring system and two electrically operating switching magnets over which the control element is movable in two discrete opposite operating positions and is retained thereat by either switching magnet, the locus of the position of equilibrium of the spring system lying between the two operating positions, characterized in the

provision of a compression device in engagement with the spring system for relocating the locus of the position of equilibrium of the spring system upon actuation of the compression device.

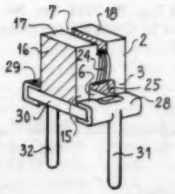


4,455,544

MAGNETIC CIRCUIT AND INDUCTION DEVICE INCLUDING THE SAME

René Sibille, and Pierre Gaudry, both of Bagnolet, France, assignors to LCC.CICE-Compagnie Europeene de Composants Electroniques, Bagnolet, France

Filed May 17, 1982, Ser. No. 378,732
Claims priority, application France, May 19, 1981, 81 09939
Int. Cl.³ H01F *15/10, 17/04, 27/26*
U.S. Cl. 336—65 8 Claims



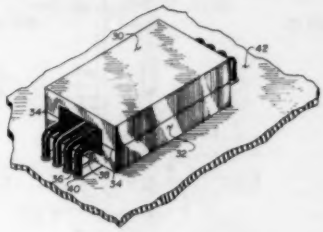
1. A magnetic circuit for an induction device having a parallelepipedic bar comprising a pair of electrical connecting means for establishing electrical connection with said bar, upper and lower pairs of leg means respectively defining one upper groove and at least one lower groove, the width of said upper groove being smaller than the width of said lower groove to enhance to a maximum extent the magnetic flux in said upper groove, said upper and lower grooves being substantially located above one another and adapted to receive a coil, said circuit being substantially H-shaped in a plane perpendicular to said grooves, and an isolating layer fixed to said lower pair of leg means and separating said pair of electrical connecting means.

4,455,545

HIGH FREQUENCY OUTPUT INDUCTOR FOR INVERTER POWER SUPPLY

Randolph D. W. Shelly, Rosemere, Canada, assignor to Sperry Corporation, New York, N.Y.

Filed Nov. 5, 1982, Ser. No. 439,501
Int. Cl.³ H01F *5/00*
U.S. Cl. 336—200 7 Claims



1. An improved low self-capacitance high frequency inductor in combination comprising:

a plurality of substantially linear electrically conductive segment means for conducting a unidirectional current with a high frequency component superimposed thereon;

a pair of channel-shaped ferrite core means for use as the core of the inductor, each of said pair having first and second legs, spaced apart and extending longitudinally therefrom, said first legs of said pair and said second legs of said pair having superposed contact surfaces proximately separated by gap means having a predetermined permeability and defining an axial aperture for linearly receiving said electrically conductive segment means; and

printed circuit board means having a predetermined array of mounting holes therein, ones of said mounting holes plated through with electrically conductive means, and said plated through electrically conductive means in predetermined ones of said holes electrically coupled together by printed circuit conductive means, for defining one of a plurality of available conductor turns patterns, wherein adjacent ends of predetermined ones of said conductive segment means are electrically connected in parallel by ones of said printed circuit conductive means on said printed circuit board means, and opposing ends of the parallel grouping thus formed are electrically connected in series by other ones of said printed circuit conductors mounted on said printed circuit board means; each of said segment means including connection means for engaging associated ones of said plated through holes in said printed circuit board means and making electrical interconnection therewith.

4,455,546

VARIABLE RESISTOR AND SWITCH ASSEMBLY HAVING SEPARATE SLIDERS

Lynn Roszel, Richardson, Tex., assignor to Prescolite, a Div. of U.S. Indus., San Leandro, Calif.

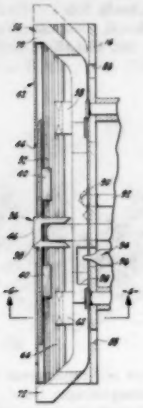
Filed Feb. 28, 1983, Ser. No. 470,296
Int. Cl.³ H01C *10/00*
U.S. Cl. 338—179 8 Claims

1. A switch assembly for controlling the current to a load combining an On-Off switch in series with a variable resistor the improvement comprising:

(a) a housing having a guide along a dimension thereof;

(b) an actuator being moved along said dimension of said housing, said actuator movement being defined by said guide of said housing and means for stopping movement of said actuator, said actuator further including an opening therethrough for permitting a first portion of an element of the variable resistor to pass therethrough and a

second portion of the element of the variable resistor to remain accessible on one side of said actuator, said actuator also including a cam surface for contacting a portion of



the ON-OFF switch for operation of the same, said opening and said stop means being sized and positioned to permit said operation of said ON-OFF switch.

4,455,547

RESISTIVE ELEMENT FORMED IN A SEMICONDUCTOR SUBSTRATE

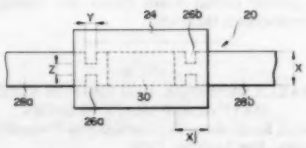
Kenji Murakami, Yokohama, and Seiji Hayashi, Isahaya, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 5, 1983, Ser. No. 455,837

Claims priority, application Japan, Jan. 14, 1982, 57-4711; Jan. 14, 1982, 57-4713

Int. Cl.³ H01C *1/02*

U.S. Cl. 338—308 **6 Claims**



1. A resistive element which comprises:

a first semiconductor region which is formed in a semiconductor substrate and in which an impurity is diffused at a first concentration;

a second semiconductor region which is connected at a first boundary to one end of said first semiconductor region , and in which an impurity is diffused at a second concentration higher than said first impurity concentration; and

said second and third semiconductor regions each including a narrow portion whose cross section area is smaller than the area of said first and second boundaries, respectively .

4,455,548

CALL SYSTEM AND METHODS AND APPARATUS FOR OPERATING SAME

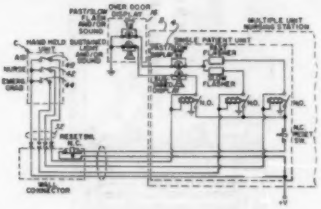
Dorothy K. Burnett, 87 Pine St., Belmont, Mass. 02178

Continuation-in-part of Ser. No. 228,270, Jan. 26, 1981. This application May 24, 1982, Ser. No. 381,082

The portion of the term of this patent subsequent to Nov. 29, 2000, has been disclaimed.

Int. Cl.³ G08B *7/06*; H04M *11/02*

U.S. Cl. 340—293 **10 Claims**



1. A call system for use in hospitals, nursing homes and the like, wherein services provided may be classified in three groups in terms of importance in responding to the patient's needs including services lowest in importance by a nurse's aide, services of greater importance rendered by a nurse or a doctor and services of greatest importance rendered by an emergency unit or team, said call system comprising signal generating means to be located at a nurse's call station, electrical means for enabling a patient to operate the signal generating means from a patient's place of occupancy which is at a distance from the call station, said electrical means including a portable call box located within reach of the patient at the patient's place of occupancy, said call box having constructed therein a plurality of switches operable by the patient for selectively energizing the signal generating means to produce coded signals of differing message characteristics which are prioritized or coded in ascending order of importance and which are correlated with the said three classified groups of services.

4,455,549

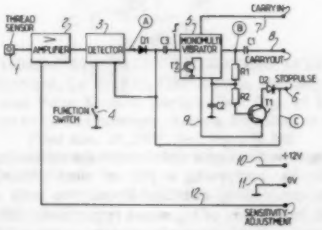
INDICATION DEVICE

Sten A. Rydborn, Klöxhultsvägen 21, 343 00 Älmhult, Sweden

Filed Sep. 29, 1981, Ser. No. 306,975

Int. Cl.³ G08B *23/00*; D01H *13/16*

U.S. Cl. 340—517 **6 Claims**



1. A signaling system for a plurality of transducer elements comprising:

a plurality of transducer circuits, each including a signal input terminal adapted for connection to a transducer element for receipt therefrom of a transducer input signal indicative of an event for which the transducer element is responsive, a signal output terminal, a control input termi-

nal, a control output terminal, and circuit means responsive to receipt of a transducer input signal on said signal input terminal for generating a transducer output signal on said signal output terminal and a control output signal on said control output terminal and responsive to receipt of a control input signal on said control input terminal for generating a deviation in any transducer output signal then present on said signal output terminal and generating a control output signal on said control output terminal;

a control line including means coupling the control output terminal of each of said transducer circuits to the control input terminal of an adjacent transducer circuit to couple all of said transducer circuits in series;

a signal line including means coupling said signal line to the signal output terminal of each of said transducer circuits to couple all of said transducer circuits in parallel;

whereby in response to detection of an event by a transducer element, there appears on said signal line a transducer output signal including a number of deviations equal to the number of transducer circuits in the series connection between the transducer circuit associated with the transducer element that detected the event and the last transducer circuit in the series connection.

4,455,550

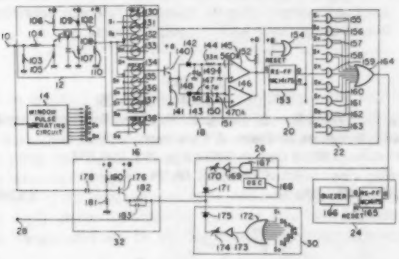
DETECTION CIRCUIT FOR A VIDEO INTRUSION MONITORING APPARATUS

Shozo Iguchi, Tokyo, Japan, assignor to General Research of Electronics, Inc., Tokyo, Japan

Continuation of Ser. No. 204,597, Nov. 6, 1980, abandoned. This application Sep. 28, 1982, Ser. No. 425,500

Int. Cl.³ G08B *25/00*; H04N *7/18*

U.S. Cl. 340—525 **4 Claims**



1. An intrusion monitoring apparatus receiving a video output comprising a sequence of video frame images from a television camera and generating an alarm in response to the detection of an intrusion, comprising: means for generating at least one window pulse per one video frame, said window pulse having a timing and length determining a specified spot of a video frame image, means for gating and extracting a video signal portion of the video output from said camera by using said at least one window pulse, detection means for providing a detection output signal in response to changes in the level of the gated video signal portion, said detection means including a first amplifier and a second amplifier having respective inverting and non-inverting inputs and a common output circuit, first and second resistor-capacitor time constant circuits responsive to said gated video signal and each feeding the inverting input of one of the first and second amplifiers and the non-inverting input of the other of said first and second amplifiers, the first resistor-capacitor time constant circuit having a time constant different from that of the second resistor-capacitor time constant circuit, whereby the common output circuit provides said detection output signal only in response to a change in the level of said gated video signal which occurs within a time interval of on the order of the difference in the time constants of said first and second resistor-capacitor time constant circuits, and means for providing the alarm in response to said detection output signal.

4,455,551

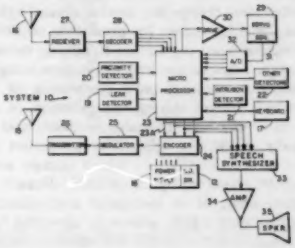
SYNTHETIC SPEECH COMMUNICATING SYSTEM AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation of Ser. No. 110,542, Jan. 8, 1980, abandoned. This application Jul. 20, 1981, Ser. No. 284,641

Int. Cl.³ G08B *1/08, 21/00*

U.S. Cl. 340—539 **22 Claims**



1. A communication system comprising:

first means for generating a first varying analog signal indicative of a change in a condition,

signal processing means including an analog-to-digital conversion means for receiving said first varying analog signal and generating digital signals indicative of variations in said analog signal generated by said first means,

first electronic circuit means operable to receive said digital signals and generate control signals,

second electronic circuit means operable in response to said control signals generated by said first electronic circuit means for generating synthetic speech signals indicative of said change in condition, and

third means for receiving said synthetic speech signals and transducing same to speech sounds of words which are indicative of said change in condition.

4,455,552

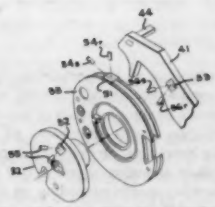
COMBINATION LOCKS WITH ELECTRO-OPTICAL SILENT ALARM SYSTEM

Garry C. Greiner, Lexington, and Joe A. Shelley, Jr., Paris, both of Ky., assignors to Sargent & Greenleaf, Inc., Nicholasville, Ky.

Filed Nov. 24, 1981, Ser. No. 324,821

Int. Cl.³ E05B *45/06*

U.S. Cl. 340—543 **6 Claims**



1. In a combination lock having a lock case provided with a tumbler post, a rotatable combination lock dial positioned for manual manipulation to dial the lock combination and having spindle means driven thereby extending through the tumbler

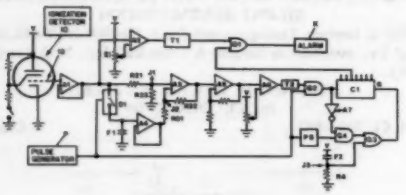
post, a lock mechanism in said case having components including a plurality of rotatable members to be rotatably positioned responsive to rotation of said dial comprising a tumbler wheel stack formed of a plurality of peripherally gated tumbler wheels loosely journaled on said tumbler post for rotation about its axis and a peripherally gated rotatable driving cam driven from the dial, coupling means intercoupling the driving cam and tumbler wheels for adjusting the angular positions of the tumbler wheels responsive to dial rotation, and a fence lever pivotally connected to a bolt for shifting the bolt between locked and unlocked positions and having a fence insertable into the peripheral gates of the tumbler wheels when they are properly aligned following dialing of the proper lock combination; the improvement comprising electro-optical light sensing and electrical signalling means for producing sensible indications at a remote monitoring station signifying movement of components of the combination lock mechanism comprising an optically distinctive marking on a component of the lock mechanism which moves during manipulation of the lock including at least one of said rotatable members, said marking having optically distinctive reflectivity properties from remaining parts of such component which occupy any of the path of movement traversed by the optically distinctive marking during movement of its associated component, optical sensor means including a light source for directing light onto the path traversed by said optically distinctive marking during movement thereof responsive to attempted opening manipulation of the lock and photosensor means positioned to receive light from said light source reflected from said optically distinctive marking at predetermined positions thereof for generating movement detection electrical signal signifying movement of said optically distinctive marking, electrical signal amplifying means for receiving said signal and producing an amplified output, and electrical circuit means including alarm signal producing means activated by said amplified signals to produce a sensible alarm signal at a remote monitoring station signifying movement of said optically distinctive marking.

4,455,553

SMOKE DETECTOR OF THE IONIZATION TYPE

Robert E. Johnson, Pembroke, Mass., assignor to Pyrotector, Inc., Hingham, Mass.

Filed May 17, 1982, Ser. No. 378,400
Int. Cl.³ G08B *17/10*
U.S. Cl. 340—629 **7 Claims**



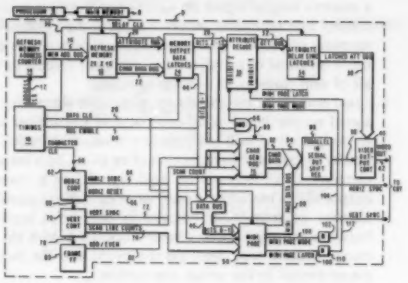
1. A smoke detector of the ionization type comprising a chamber containing a measuring electrode, the voltage on the measuring electrode being a function of the smoke concentration in the chamber, means responsive to a predetermined change in smoke concentration in a predetermined time in the chamber to produce an output signal to one input of an AND gate, pulse generating means providing an intermittent signal at the other terminal of the gate, a counter, means responsive to simultaneous pulse and output signals at the gate inputs to advance the counter one count, said counter having a reset terminal, means applying each pulse to the reset terminal except when the gate produces an output, and means responsive to accumulation in said counter of more than two counts for energizing alarm means.

4,455,554

PROPORTIONALITY IN MINATURE DISPLAYS

Kent R. Demke, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1981, Ser. No. 227,109
Int. Cl.³ G09G *1/16*
U.S. Cl. 340—731 **9 Claims**



1. For use in a word processing system including a keyboard, a display, a main memory, a display memory, and a printer with multiple pitch options, the improvement in text display method comprising the steps of:

(1) displaying at least a portion of at least one full size line of text;

(2) at the same time as step 1, displaying a miniature full page representation comprising miniature character indicators arranged to reflect format of the represented text; and

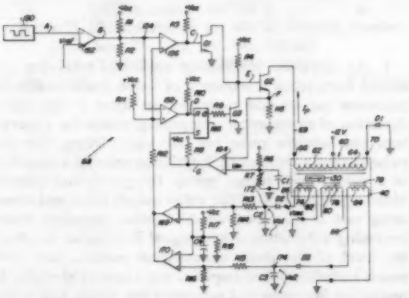
(3) varying the horizontal spacing between miniature character indicators within the miniature full page representation in accordance with the pitch chosen.

4,455,555

CONTROL TRANSDUCER

Dean H. Symonds, and David E. Brandon, both of Waterloo, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Oct. 6, 1980, Ser. No. 194,574
Int. Cl.³ G08C *19/06, 19/12*
U.S. Cl. 340—870.31 **8 Claims**



1. An inductive displacement transducer for converting displacement between at least two relatively movable objects into electrical signals, the transducer comprising:

a primary coil connected to and movable with one of the relatively movable objects and connected to an energy source for generating a magnetic flux, the primary coil including an axial bore extending therethrough;

at least one secondary core fixed relative to the one relatively movable object and spaced apart from the primary coil;

at least one secondary coil surrounding the secondary core

for producing an electrical signal in response to magnetic flux in the secondary core;

movable magnetic flux conducting means mechanically connected to and movable with the other of the relatively movable objects for coupling magnetic flux between the primary coil and secondary cores, the flux conducting means including a hollow cylindrical portion rotatably received by the axial bore; and

a shaft with a first portion connected to the other of the relatively movable objects and with a second portion received by the hollow cylindrical portion of the flux conducting means, the flux conducting means being fixed to and rotatable with the shaft to vary the magnetic flux coupling between the primary coil and secondary cores.

4,455,556

DISTANCE MEASURING EQUIPMENT

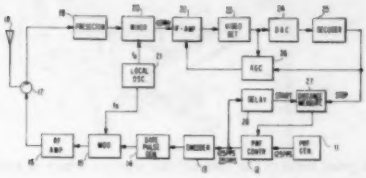
Tatsukichi Koshio, and Osamu Okamoto, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed May 12, 1981, Ser. No. 262,860

Claims priority, application Japan, May 19, 1980, 55/66113; Sep. 9, 1980, 55/124874; Mar. 3, 1981, 56/30285

Int. Cl.³ G01S *13/76, 7/28*

U.S. Cl. 343—7.3 **13 Claims**



1. A distance measuring equipment, in which an interrogation pulse is transmitted from an interrogator and a reply pulse is transmitted from a transponder in response to said interrogation pulse, and by measuring the time from the transmission of said interrogation pulse to the reception of said reply pulse on the basis of the timing positions of said interrogation pulse and said reply pulse, the distance between said interrogator and said transponder can be measured, said interrogator comprising:

a pulse generator for generating said interrogation pulse having at least the leading edge approximately expressed by the formula of

$$E\left[1-\frac{1+\sqrt{1-4F}}{2\sqrt{1-4F}}\,Exp\left(-\frac{1-\sqrt{1-4F}}{2F}\,T\right)+\frac{1-\sqrt{1-4F}}{2\sqrt{1-4F}}\,Exp\left(-\frac{1+\sqrt{1-4F}}{2F}\,T\right)\right]$$

where E and F represent finite positive numbers and T represents time, and

means for detecting said timing position of said reply pulse, said timing position being selected in the proximity of an inflection point of said reply pulse,

and said transponder comprising:

a pulse generator for generating said reply pulse, and

means for detecting said timing position of said interrogation pulse, said timing position being selected in the proximity of an inflection point of said interrogation pulse.

4,455,557

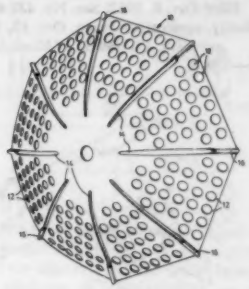
DISHED REFLECTOR AND METHOD OF MAKING SAME

John Thomas, 11 Sussex St. North, Lindsay, Ontario, Canada

Filed Jun. 2, 1982, Ser. No. 384,214

Int. Cl.³ H01Q *15/16*

U.S. Cl. 343—912 **7 Claims**



1. A method of making a dished reflector comprising the steps of:

forming a blank from a piece of blank press formable stock;

cutting a series of slot formations in said blank, the extended longitudinal axis of each slot formation radiating generally from the centre area of the blank through the outer edge of the blank;

pressing the blank into the shape of a dished reflector and simultaneously folding the material of the blank laterally of the extended longitudinal axes of said slot formations adjacent at least one end of the slot formations whereby to narrow the width of the slot formation.

4,455,558

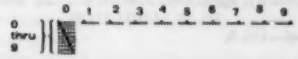
COMBINED ANALOG DIGITAL SYMBOLS

Albert J. Williams, Jr., 901 Llanfair Rd., Ambler, Pa. 19002, and Raymond C. Machler, 1807 Old Forty Foot Rd., Harleysville, Pa. 19438

Continuation of Ser. No. 260,973, May 6, 1981, abandoned. This application Sep. 17, 1982, Ser. No. 419,130

Int. Cl.³ G01G *9/08*

U.S. Cl. 346—1.1 **14 Claims**



1. In a method for recording successive magnitudes of a quantity in both digital and analog form using as required any one of ten symbols each of which corresponds to one of the Arabic digits zero through nine inclusive, the successive magnitudes of said quantity are recorded sequentially in a column, the improvement wherein the maximum width of each of said symbols is established by a row of six dots extending from left to right with five equal spaces therebetween, the separation between dots being substantially equal to the width of the dots, thus establishing eleven quantitized locations, the steps of producing each symbol in digital form by selecting and identifying one of said locations, said identification being accomplished by a modification of each said row of six dots by adding one dot or deleting a maximum of two dots, to form a symbol having conformity in width, and stacking said selected symbols to form a well defined column, whereby any changes in magnitude of the quantity recorded in digital form by the symbols in

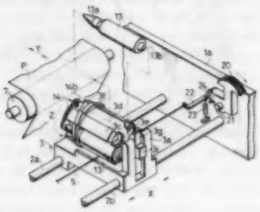
the column are also apparent in analog form without deciphering the symbols.

4,455,559

PEN RECORDER

Kyuichi Fujisawa, Tonan, and Mineo Shibata, Tamayama, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Oct. 8, 1982, Ser. No. 433,402
Claims priority, application Japan, Oct. 12, 1981, 56-151247
Int. Cl.³ G01D *9/30*
U.S. Cl. 346—139 R **8 Claims**



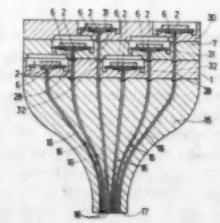
1. In a pen recorder for obtaining desired recording data by pushing pen means mounted to a pen holder onto recording paper, the improvement comprising:
(a) a feed mechanism for feeding said recording paper;
(b) a moving pen holder for supporting said pen means; and
(c) hammer means disposed at the rear of said pen means so as to bring the tip of said pen means into contact with said recording paper;
(d) the tip of said pen means being fitted into support holes bored on a leaf spring fixed to said pen holder;
(e) said leaf spring urging said pen means toward said hammer means;
(f) said pen means being detachable relative to said pen holder;
(g) said support hole of said leaf spring being shaped by expanding a part of a round hole in the direction opposite the pen withdrawing direction.

4,455,560

INK JET PRINTING HEAD AND METHOD OF MANUFACTURING SUCH AN INK JET PRINTING HEAD

Friedrich Louzil, Breitenseerstrasse 116, 1140 Vienna, Austria

Filed Nov. 20, 1981, Ser. No. 323,619
Claims priority, application Austria, Dec. 15, 1980, 6104/80
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **4 Claims**



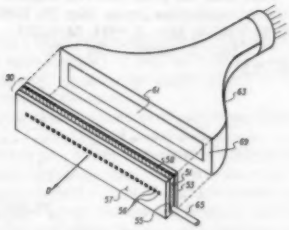
1. An ink jet printing head, which comprises at least one supporting section for a number of pressure chambers which communicate with an ink duct via supply ducts and the principal dimension of the base of which is substantially larger than their height, the pressure chambers being adjacently arranged in the supporting section, a jet nozzle duct emerging from each pressure chamber in order to supply ink to a nozzle which is situated opposite the pressure chambers, characterized in that there are provided at least two stacked supporting sections on which the pressure chambers are distributed so that they are staggered with respect to one another, the jet nozzle ducts which emerge from pressure chambers in the supporting section which is remote from the nozzles, viewed in the stacking direction, extending between the pressure chambers in the supporting section which is nearer to the nozzles, viewed in the stacking direction.

4,455,561

ELECTRON BEAM DRIVEN INK JET PRINTER

James H. Boyden, Los Altos Hills; Donald R. Bradbury, Palo Alto; Garrett A. Garrettson, Los Altos Hills; Timothy R. Groves, Palo Alto; Lawrence R. Hanlon, Menlo Park, and Armand P. Neukermans, Palo Alto, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 22, 1982, Ser. No. 443,710
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **60 Claims**



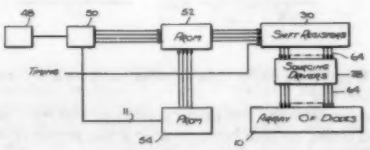
1. A print head of the thermal ink jet type which is activated by an electron beam comprising:
an ink reservoir having an inner surface for containing ink;
a film of electron permeable material in close proximity to said ink reservoir;
absorber means attached to said film and arranged to be in thermal contact with said ink, for absorbing electrons from said electron beam which pass through said film, and for converting the kinetic energy of electrons so absorbed to thermal energy for quickly heating said ink to form a bubble therein; and
orifice means for permitting ejection of ink droplets from said reservoir in response to said bubble formation.

4,455,562

CONTROL OF A LIGHT EMITTING DIODE ARRAY

Donald T. Dolan, Ridgefield, and Henry Stalzer, Danbury, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 14, 1981, Ser. No. 292,985
Int. Cl.³ G01D *15/14*
U.S. Cl. 346—154 **10 Claims**



2. An apparatus for controlling the output of individual light emitting diodes formed in an array to obtain a substantially uniform energy output from each of the diodes of the array, comprising: means for providing a plurality of light emitting diodes, means for connecting each of the light emitting diodes

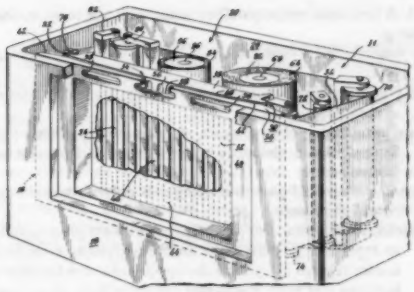
to a selectable enabling means, means for storing information relative to the light intensity characteristic of each light emitting diode, and control means connected to said storing means for controlling the period during which said enabling means enables the diodes, said control means having a plurality of periods, said storing means providing information to said control means for determining the period or a combination of said periods during which a diode is to be enabled in response to the light intensity characteristic of said diodes to produce a substantially uniform energy output from each of the diodes.

4,455,563

SYSTEM AND FILM GATE FOR ACCURATELY IMAGING INFORMATION ON A FILM BY A CHARGED PARTICLE BEAM

Andrew A. Tarnowski, New Canaan, Conn., assignor to Image Graphics, Inc., Fairfield, Conn.

Filed Jul. 2, 1981, Ser. No. 279,834
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—161 **10 Claims**



1. A system for accurately imaging a film by a charged particle beam comprising

means defining a first volume having a high vacuum therein through which a charged particle beam is projected

means defining a second volume having a partial vaccum therein lower in pressure than said first volume

a film gate having a film positioning platen positioned transverse to said beam of charged particles to create a barrier between said two volumes, said gate having means for ingress and egress of said film to the higher vacuum volume and the beam face of said platen, said platen having a film receiving surface and a non film receiving surface adjacent to said film receiving surface

transport means for moving said film through said ingress and egress means from said second volume across said platen in contiguous relationship therewith for exposing said film to said beam of charged particles in said first volume and

vent means in said platen coextensive with said film receiving surface and said non film receiving surface for venting said beam face of said platen behind the film to said first volume to avoid film distortion.

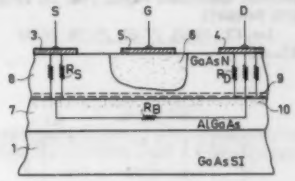
4,455,564

FIELD EFFECT TRANSISTOR WITH A HIGH CUT-OFF FREQUENCY

Daniel Delagebeaudeuf, and Trong L. Nuyen, both of Paris, France, assignors to Thomson-CSF, Paris, France

Continuation of Ser. No. 181,646, Aug. 26, 1980. This application Jun. 9, 1983, Ser. No. 501,552
Claims priority, application France, Sep. 10, 1979, 79 22586
Int. Cl.³ H01L *29/80*
U.S. Cl. 357—22 **5 Claims**

1. A field effect transistor with a high cut-off frequency having, supported by a semi-insulating substrate, two access regions called the source and the drain and one control region formed by a metal grid called a Schottky grid, said transistor further comprising an active layer of weakly doped GaAs (N below 10^{16} electron/cm^3) and a $Al_xGa_{1-x}As$ layer doped with 5.10^{16} to 10^{18} electrons/cm^3, there being an N—N isotype heterojunction formed between said active layer and said



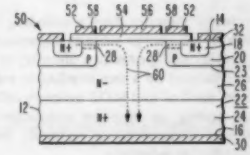
$Al_xGa_{1-x}As$ layer with a depletion region in said active layer wherein x is between 0.1 and 0.8, said $Al_xGa_{1-x}As$ layer being located between the substrate and the active layer, the active layer having a thickness of approximately one micron and being approximately equal to the thickness of said depletion region to provide a high frequency response.

4,455,565

VERTICAL MOSFET WITH AN ALIGNED GATE ELECTRODE AND ALIGNED DRAIN SHIELD ELECTRODE

Alvin M. Goodman, Princeton, and Ramon U. Martinelli, Hightstown, both of N.J., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 123,715, Feb. 22, 1980. This application Feb. 13, 1981, Ser. No. 234,834
Int. Cl.³ H01L *29/78*
U.S. Cl. 357—23.4 **5 Claims**



1. A vertical MOSFET device, comprising:

a semiconductor substrate having first and second opposing major surfaces;

a drain region of first conductivity type disposed across the second surface and including an extended drain portion extending to the first surface;

a body region of second conductivity type extending into the substrate from the first surface and being bounded by the extended drain portion;

a source region of first conductivity type extending into the substrate from the first surface within the boundaries of the body region;

a channel portion, defined at the first surface by the source region and the extended drain portion;

a source electrode contacting the source and body regions on the first surface;

a drain electrode contacting the drain region on the second surface;

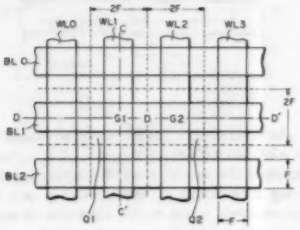
an insulated gate electrode disposed on the first surface over the channel portion and spaced from said extended drain portion; and

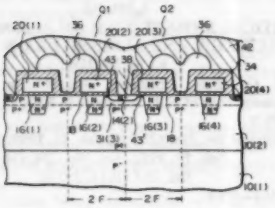
a shield electrode overlying only said extended drain portion on the first surface.

4,455,566
HIGHLY INTEGRATED SEMICONDUCTOR MEMORY DEVICE

Junji Sakurai, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 16, 1980, Ser. No. 159,505
Claims priority, application Japan, Jun. 18, 1979, 54-76568; Jun. 27, 1979, 54-80971
Int. Cl.³ H01L 27/02, 29/78, 29/04
U.S. Cl. 357—41 30 Claims





1. A semiconductor memory device including bit lines, word lines and a plurality of charge-storage capacitors operatively connected to corresponding ones of a plurality of MOS transistor memory cells formed on a semiconductor substrate of one conductivity type, each of said MOS memory cells comprising:

a first region having an opposite conductivity type with respect to said semiconductor substrate and formed on said semiconductor substrate;

a gate-oxide layer formed on said first region except on a window for diffusing impurities therethrough;

a gate electrode formed on said gate-oxide layer and operatively connected to a corresponding one of said word lines;

a second region having the same conductivity type as said semiconductor substrate and formed under said window by diffusing impurities through said window into said first region, said second region extending to a portion under a part of said gate electrode, and;

a third region having the same conductivity type as said first region and formed on said second region by diffusing impurities through said window into said second region, and operatively connected to a corresponding one of said bit lines,

said gate electrode covering the surface of said first region and said second region and, separated from said first and second regions by said gate-oxide layer,

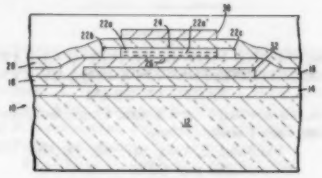
the junction capacitance between said first region and said second region and the capacitance between said first region and said semiconductor substrate form said charge-storage capacitor, and

the size of each of said MOS memory cells being substantially equal to 4 F^2, where F represents both the minimum width of a patterning line and the minimum width of the spacing between two adjacent patterning lines.

4,455,567
POLYCRYSTALLINE SEMICONDUCTOR RESISTOR HAVING A NOISE REDUCING FIELD PLATE

Joseph Y. M. Lee, Agoura, and Gary E. Grimm, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 27, 1981, Ser. No. 325,447
Int. Cl.³ H01L 27/02, 29/40, 29/04
U.S. Cl. 357—51 1 Claim



1. A low noise polycrystalline semiconductor resistor, comprising:

a semiconductive substrate including an overlying dielectric layer;

a polycrystalline semiconductor resistor formed in said dielectric layer;

an insulated polycrystalline semiconductor field plate formed in said dielectric layer between said resistor and said substrate;

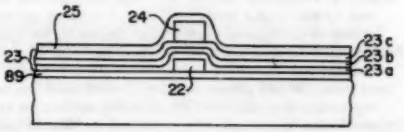
an insulated field plate overlying said polycrystalline semiconductor resistor; and

means for applying like potentials to said field plates suitable to repel charge carriers in said polycrystalline semiconductor resistor away from the upper and lower boundaries between said resistor and said dielectric layer and toward the core of said resistor so as to reduce noise in said polycrystalline semiconductor resistor.

4,455,568
INSULATION PROCESS FOR INTEGRATED CIRCUITS

Philip Shiota, Saratoga, Calif., assignor to American Microsystems, Inc., Santa Clara, Calif.

Filed Aug. 27, 1981, Ser. No. 296,734
Int. Cl.³ H01L 29/34, 29/04, 29/78
U.S. Cl. 357—54 9 Claims



1. A capacitor for use in an integrated circuit comprising:

a first insulation layer formed on a semiconductor substrate;

a first polycrystalline silicon region formed on said insulating layer;

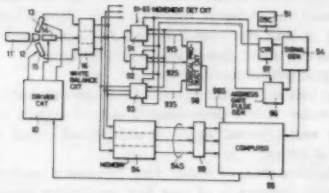
a second insulation layer formed on the surface of said first polycrystalline silicon region; said second insulation layer comprising a first layer of silicon dioxide, a layer of silicon nitride located on said first layer of silicon oxide, and a second layer of silicon dioxide located on said layer of silicon nitride; and

a second polycrystalline silicon region formed on said second insulation layer and located above and insulated from said first polycrystalline silicon region.

4,455,569
COLOR IMAGING APPARATUS

Kenji Takahashi, Kodaira; Shusaku Nagahara, Hachioji; Morishi Izumita, Inagi; Kazuhiro Sato, Tokyo; Toshiyuki Akiyama, Kodaira, and Naoki Ozawa, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 6, 1982, Ser. No. 337,409
Claims priority, application Japan, Jan. 28, 1981, 56-10236
Int. Cl.³ H04N 9/09, 9/62
U.S. Cl. 358—51 12 Claims

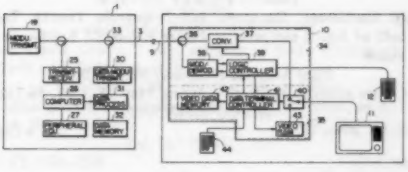


1. A color imaging apparatus comprising means including a plurality of image pickup tubes for imaging respective primary colors separated from an optical image of an object, adjusting means for adjusting the relative positional relations of the images of said respective image pickup tubes, decision means for detecting on a frame by frame basis those image signals from among a frame of image signals from said image pickup tubes that relate to a selected local area of said image which satisfy a predetermined requisite, storage means for temporarily storing the image signals detected by said decision means, and means for controlling said adjusting circuit by the use of said image signals stored in said storage means.

4,455,570
CATV SYSTEM

Yoshifumi Saeki, and Kenji Yashiro, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 13, 1981, Ser. No. 311,082
Claims priority, application Japan, Oct. 13, 1980, 55-142818; Oct. 13, 1980, 55-142819; Oct. 13, 1980, 55-142820
Int. Cl.³ H04N 7/10
U.S. Cl. 358—86 7 Claims



1. A cable television system of the type comprising a plurality of subscriber terminal units, each including a television set, a transmission center and a cable network connected to said transmission center and terminal units for carrying television video signals from said center to said terminal units, the improvement comprising:

two-way communication means for providing two-way communication between said center and terminal units, said two-way communication means including means for transmitting video data signals to said terminal units over a data channel, which data channel is not used for normal television program signals, said two-way communication means comprising:

a data memory section at said center for storing video data;

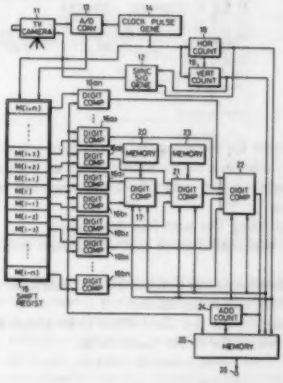
a data processing section at said center for reading video data from said data memory section according to a video data command signal received over a data channel from a particular terminal unit and for transmitting said video data over said data channel to said particular terminal unit;

a video data processing section at said terminal unit for transmitting said video data command signal to said center over said data channel and for displaying said video data transmitted by said center on said television set.

4,455,571
COMPRESSION SYSTEM AND COMPRESSION AND EXPANSION SYSTEM FOR A COMPOSITE VIDEO SIGNAL

Kyoichi Shimizu; Kiyoshi Sato, both of Yokohama, and Tadashi Takahaski, Mitaka, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 8, 1982, Ser. No. 355,510
Claims priority, application Japan, Mar. 10, 1981, 56-34143
Int. Cl.³ H04N 7/12
U.S. Cl. 358—138 8 Claims



1. A compression system for a composite video signal comprising:

shift register means sequentially supplied with sampled values of the composite video signal, for sequentially storing and shifting each of the sampled values;

position signal generating means synchronized with said shift register means, for generating a position signal which indicates the sampling point of each sampled value in the composite video signal;

comparing means supplied with each of the sampled values stored in said shift register means, for comparing an arbitrary sampled value with each of the other sampled values stored in said shift register means;

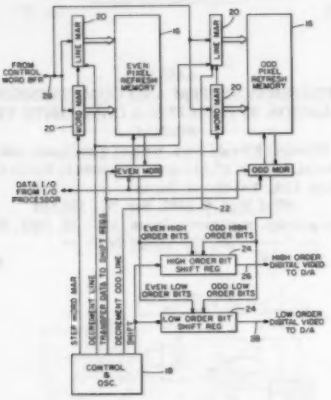
discriminating means supplied with output compared results of said comparing means, for discriminating whether the sampling point of said arbitrary sampled value is a maximum point, a minimum point, or a rapidly changing point of the composite video signal, and for producing a discrimination signal which indicates the discriminated result; and

transmitting means for transmitting said arbitrary sampled value from said shift register means together with said position signal from said position signal generating means only when said discrimination signal from said discriminating means indicates that the sampling point of said arbitrary sampled value is a maximum, minimum, or rapidly changing point of the composite video signal.

4,455,572
FLICKER FREE STRETCHED GRAMS

Ancile E. Malden, Potomac, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 15, 1982, Ser. No. 339,970
Int. Cl.³ H04N 5/14
U.S. Cl. 358—160 **7 Claims**



1. An apparatus for reducing the visual perception of flicker of data displayable on a single scan line on an optical display having an interlaced first raster field and a second raster field and comprising:

means for dividing the scan line data into a

plurality of designated even and designated odd alternate pixels,

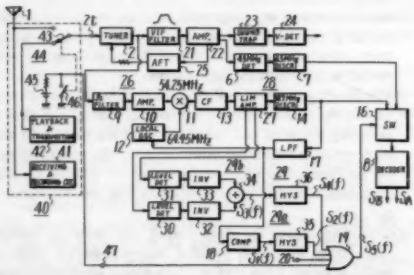
means for displaying the designated odd pixels during a line of one of the raster fields, and

means for displaying the designated even pixels during an adjacent line of the other raster field.

4,455,573
TELEVISION SOUND RECEIVER

Yoshihiro Yamamoto, Tokyo, and Hiromi Kawakami, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 21, 1982, Ser. No. 390,770
Claims priority, application Japan, Jun. 25, 1981, 56-98590
Int. Cl.³ H04N 5/60
U.S. Cl. 358—198 **13 Claims**



1. A television receiver comprising:

input terminal means for receiving a modulated television sound signal having a frequency associated therewith and which is selected from at least one broadcasting station and a home television apparatus;

tuning means for tuning the receiver to the frequency of said modulated television sound signal and providing a tuned output signal, said tuning means including first oscillating means for producing an oscillating signal at an oscillating frequency;

intercarrier sound demodulating means for demodulating said tuned output signal and providing an intercarrier sound demodulated output signal;

split-carrier sound demodulating means for demodulating said tuned output signal, which includes a limiter amplifier having at least one output signal, and which provides a split-carrier sound demodulated output signal;

sound signal output terminal means;

switching means operable to select from said intercarrier and split-carrier sound demodulated output signals and to supply said selected signal to said sound signal output terminal means;

error detecting means for detecting frequency error in said oscillating frequency of said first oscillating means and providing an error detected output signal;

first operational means for operating on said error detected output signal and providing a first operational output signal which has at least a high level and a low level;

control means operable for providing a control output signal having at least a high level and a low level in accordance with the type of modulated television sound signal selected by said input terminal means;

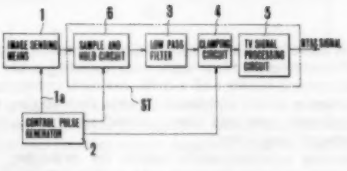
level detecting means for detecting said at least one output signal of said limiter amplifier and providing a level detected output signal; and

second operational means for operating on said level detected output signal and providing a second operational output signal which has at least a high level and a low level; whereby said signal selected by said switching means and supplied to said sound signal output terminal means is selected in accordance with the level of said output signal of said first operational means, the level of said output signal of said control means and the level of said output signal of said second operational means.

4,455,574
IMAGE PICKUP DEVICE

Seiji Hashimoto, Kanagawa and Nobuyoshi Tanaka, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 12, 1982, Ser. No. 377,586
Claims priority, application Japan, May 15, 1981, 56-72230
Int. Cl.³ H04N 3/15
U.S. Cl. 358—213 **6 Claims**



1. An image pickup device comprising:

(A) an image sensing surface having a first portion for obtaining image signals and a second portion for obtaining an optical black reference;

(B) means for scanning said image sensing surface; and

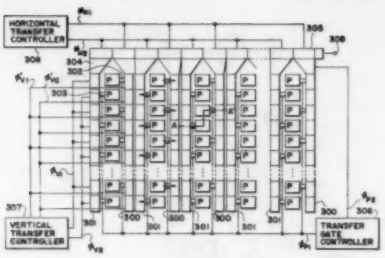
(C) means for controlling the scanning means to change the scanning speed of said scanning means between said first portion and said second portion.

4,455,575

TWO-DIMENSIONAL SOLID-STATE IMAGE SENSOR

Makoto Murakoshi, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed May 18, 1982, Ser. No. 379,494
Claims priority, application Japan, May 19, 1981, 56-75489
Int. Cl.³ H04N 3/15
U.S. Cl. 358—213 4 Claims



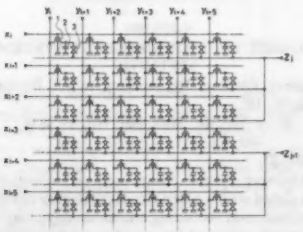
1. A two-dimensional solid-state image sensor comprising:
a plurality of optoelectro transducers arranged in a matrix form;
first and second vertical transfer paths provided corresponding to each column of the optoelectro transducers;
a horizontal transfer path for serial-parallel converting signals transferred via the first and second vertical transfer paths to output the converted signals;
gate means for simultaneously transferring stored information of the optoelectro transducers of odd and even number rows to the first and second vertical transfer paths, respectively; and
a transfer controller for performing transfer control of the first and second vertical transfer paths and the horizontal transfer path, by which the stored information of the optoelectro transducers of the odd number rows transferred to the first vertical transfer path is outputted as a video signal of an odd number field first and then the stored information of the optoelectro transducers of the even number rows transferred to the second vertical transfer path is outputted as a video signal of an even number field.

4,455,576

PICTURE DISPLAY DEVICE

Hideo Hoshi, Tokyo, Japan, assignor to Seiko Instruments & Electronics Ltd., Tokyo, Japan

Filed Nov. 20, 1981, Ser. No. 323,494
Claims priority, application Japan, Apr. 7, 1981, 56-52275; Jun. 1, 1981, 56-84037
Int. Cl.³ H04N 5/66
U.S. Cl. 358—230 11 Claims



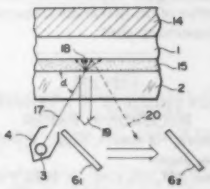
1. In a picture display device comprised of field effect transistors arranged in a line and row configuration and being deposited on a semiconductor layer formed on an insulating substrate, a first electrode receptive of video signals during use of the picture display device and comprising one electrode of each field effect transistor, a second transparent electrode receptive of a voltage during use of the picture display device and being deposited on a transparent substrate opposite to said first electrode and a liquid crystal held between said first and second electrodes, the improvement comprising: said second electrode being divided in a line direction so as to have a width equivalent to plural lines of said first electrode; means to invert the polarity of the video signals applied to the first electrode; and means to sequentially invert the polarity of the voltage applied to the second electrode.

4,455,577

ORIGINAL READER

Mitsuhiro Tokuhara, Chigasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 12, 1982, Ser. No. 407,472
Claims priority, application Japan, Aug. 21, 1981, 56-131088
Int. Cl.³ H04N 1/10
U.S. Cl. 358—294 4 Claims



1. An original reader in an image-forming apparatus comprising:
an original table on which an original is placed;
an original pressing plate which can be opened and closed relative to said original table;
a light diffusive member provided between said original table and said original pressing plate such that said light diffusive member can be interposed between an original to be read and the original table;
illumination means for illuminating said original placed on said original table through said table; and
image pickup means disposed to receive the reflected light from said original for reading said original.

4,455,578

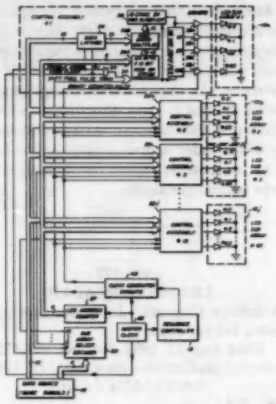
ELECTRONICS FOR ARRAYED PHOTOSOURCES

William T. Fearnside, Fishers, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 30, 1982, Ser. No. 413,013
Int. Cl.³ H04N 1/24
U.S. Cl. 358—302 14 Claims

1. Apparatus comprising
(a) actuable means,
(b) shift register means for storing information in the form of digitized bits,
(c) means for producing a pulse train, the pulses of which are weighted according to predetermined coding,
(d) means for shifting said shift register means simultaneously with or before the occurrence of each pulse train pulse, and
(e) means for receiving the output of said shift register means and the pulses of said pulse train for operating said actuable means in response to the concomitant receipt by said

receiving means of a shift register bit and a pulse train pulse,



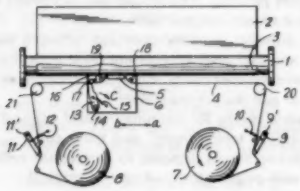
whereby the minimal duty cycle of the pulses of said pulse train is determinative of the maximum frequency at which said shift register is required to shift.

4,455,579

APPARATUS FOR PRODUCING A COLOR PICTURE ON RECORDING PAPER

Yoshihiro Tsukamura, Kawasaki, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 201,779, Oct. 29, 1980, Pat. No. 4,378,566.
This application Jun. 11, 1982, Ser. No. 387,413
Claims priority, application Japan, Nov. 2, 1979, 54-142253
Int. Cl.[3] H04N *9/49*
U.S. Cl. 358—310 15 Claims



1. Apparatus for producing visual information on recording paper in response to an information signal, comprising:

platen means associated with said recording paper;

recording head means adapted to transfer onto said paper a pigment from a tape positioned between said recording head means and said paper so as to record said visual information on said recording paper;

control means for controlling said recording head means in response to said information signal to selectively transfer said pigment onto said recording paper;

a supply reel and a take-up reel between which said tape extends;

a first tension regulating lever pivoted at one end about a pivot pin and having its free end biased into engagement with said tape proximately said supply reel by means of a first tension spring; and

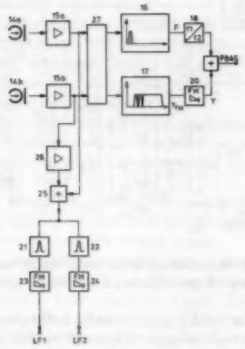
a second tension regulating lever independently operable from said first tension regulating lever and being pivoted at one end about a pivot pin and having its free end biased into engagement with said tape proximate said take-up reel by means of a second tension spring.

4,455,580

VIDEO RECORDER

Hans-Jürgen Kluth, Garbsen, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 19, 1982, Ser. No. 360,171
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1981, 3110968
Int. Cl.[3] H04N *5/782;* G11B *5/00*
U.S. Cl. 360—19.1 9 Claims



1. In a video tape recorder for recording and/or playing back a picture carrier which has been angularly modulated with a video signal, the recorder including a rotating capstan drum having two electromagnetic transducer heads mounted to travel along oblique tracks on a magnetic tape and alternatingly scan the tape, both heads being active to scan the tape simultaneously in overlap zones along the drum, and means for additionally recording an audio signal, the improvement wherein said recording means comprise means for recording an audio carrier signal composed of an audio carrier which has been frequency modulated with the audio signal together with the video signal along the oblique tracks, and said recorder further comprises a playback system including: means defining a picture signal path and an audio signal path; signal separating means connected between said heads and said paths for conducting the picture carrier to said video signal path and the audio carrier signal to said audio signal path; and signal processing means connected to said audio signal path for additively superposing the audio carrier signal portions provided by both of said heads, before the audio carrier is demodulated, while causing the audio carrier signal portions provided by one said head to differ in amplitude from the audio carrier signal portions provided by the other said head in such a manner that in the superposed signal the signal portions provided by said one head always differ in amplitude from those provided by said other head.

4,455,581

SELF-CORRECTING RECORD-PLAY SYSTEM AND METHOD

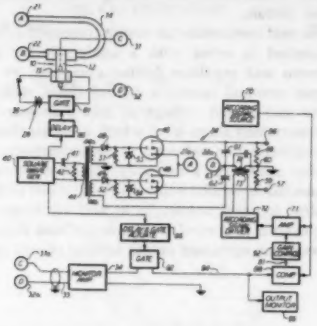
Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.

Filed Aug. 18, 1981, Ser. No. 293,838
Int. Cl.[3] G11B *27/36, 15/02*
U.S. Cl. 360—31 1 Claim

1. A transducer system comprising recording means for recording a signal with a given signal frequency component on a record medium, said recording means having a magnetic core defining a coupling region for coupling of the magnetic core with the record medium, and means coupled with said magnetic core for producing a pulse type recording field at said coupling region for recording a signal pulse on the record

medium over a distance along the record medium which is small in relation to a recorded wavelength of the signal frequency component of the signal to be recorded, and

playback means coupled with said record medium at said coupling region of said magnetic core and operative for reproducing each signal pulse immediately after recording thereof while the recorded signal pulse on the record medium remains in coupling relation with said magnetic core at said coupling region and prior to the recording of a next succeeding signal pulse at said coupling region,



said recording means having means coupled with said playback means for producing a series of pulse type recording fields at said coupling region each based both on an instantaneous value of a signal to be recorded and on the amplitude of a previously recorded signal pulse as reproduced by said playback means such that a previously recorded signal pulse on the record medium can be corrected prior to leaving said coupling region.

4,455,582

ERASE FEATURES FOR MAGNETIC MULTI-TRACK RERECORDING

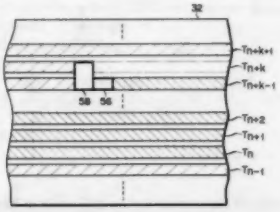
Seiichi Yanagida, Hiratsuka; Motohiko Takeuchi, and Hideki Marumoto, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 1, 1982, Ser. No. 364,235

Claims priority, application Japan, Apr. 20, 1981, 56-58612

Int. Cl.³ G11B *5/02, 5/55, 5/58, 5/86*

U.S. Cl. 360—77 **8 Claims**



1. A magnetic recording system for effecting rerecording over a specified track section including a start track and an end track selected from a plurality of recording tracks which are formed on a magnetic recording medium to extend in a first direction corresponding to a predetermined running direction of the magnetic recording medium and have an equal track width and in which data is stored, said magnetic recording system comprising:

(a) first head means for effecting recording and reproduction of data with respect to a single recording track on said magnetic recording medium;

(b) second head means, disposed in side by side relation with respect to said first head means in the first direction of said recording tracks on said magnetic recording medium and secured to said first head means, for simultaneously erasing the data stored in a predetermined number of recording tracks among the recording tracks contained in said specified track section of the rerecording, said predetermined number of recording tracks including at least a recording track traced by said first head means and the next recording track;

(c) head position adjusting means for detecting a deviation of the position of said first head means with respect to said start track and compensating for the deviation of position by moving said first and second head means in a second direction according to the detected extent of deviation; and

(d) control means, connected to said second head means, for causing the erasing operation of said second head means to be started when said first head means is brought to a position corresponding to said start track in the rerecording mode and for stopping said erasing operation of said second head means after the data stored in said end track has been erased by said second head means.

4,455,583

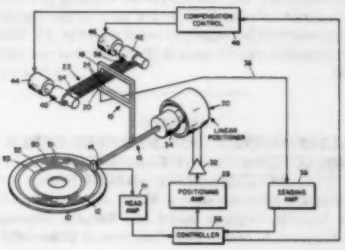
COMPENSATION FOR DIMENSIONAL CHANGES IN A RECORD MEDIUM

Ralph H. Schultz, Norristown, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed Jun. 23, 1982, Ser. No. 391,206

Int. Cl.³ G11B *21/08, 5/55*

U.S. Cl. 360—78 **7 Claims**



1. Apparatus for compensating for dimensional changes in a recording means comprising:

a record medium having first and second reference tracks thereon with a plurality of information tracks therebetween;

a flexible member having first and second reference indications with information indications therebetween corresponding to the positions of said reference and information tracks on said record medium;

means for selectively positioning a read-write head over one of said tracks and for correspondingly positioning a sensor for sensing one of said indications on said flexible member;

means for maintaining said flexible member in tension, said maintaining means movable for expanding and contracting said flexible member; and

control means coupled between said read-write head and said sensor for moving said positioning means; and

means coupled to said control means for moving said maintaining means.

4,455,584

DIGITAL SIGNAL MAGNETIC RECORDING SYSTEM

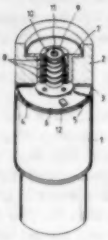
Jürgen Heitmann, Seeheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 20, 1981, Ser. No. 323,381

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1980, 3045544

Int. Cl.³ G11B *5/52, 21/04*

U.S. Cl. 360—108 **14 Claims**



1. Digital signal magnetic recording system to record digital signals on a magnetic recording medium,

having a tape scanner (**1**, **2**) including a rotating head wheel (**6**);

at least one recording head located on the head wheel,

in which the digital signals are applied to an input (**20**, **22***a*, **22***b*, **22***c*) to energize the recording head (**4**, **5**, **29**),

a two-element non-contacting signal transfer means (**9**, **23**, **24**), one element **9S**, **23S**, **24S**) of which is coupled to the input, and the other (**9R**, **23R**, **24R**) is coupled to the head (**29**), said elements of the signal transfer means (**9**, **23**, **24**) being located, respectively, on a stationary (**7**) and a rotating (**10**) portion of the scanner,

and comprising

circuit means (**27**, **28**) located on the rotating portion (**10**) of the scanner for restoring the d-c level of the digital signals interconnected between the other element (**9R**, **23R**, **24R**) of said signal transfer means (**9**, **23**, **24**) and the transducer (**29**).

4,455,585

CAR ALTERNATOR ELECTRIC POWER GENERATOR PROTECTED AGAINST TRANSIENTS DUE TO BATTERY DISCONNECTION

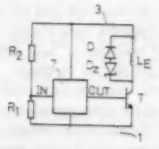
Bruno Murari, Monza; Sandro Storti, Sesto San Giovanni; Marco Morelli, Legborn, and Carlo Bozotti, Binasco, all of Italy, assignors to SGS-ATES Componenti Elettronici S.p.A., Milan, Italy

Filed Oct. 30, 1981, Ser. No. 316,907

Claims priority, application Italy, Nov. 7, 1980, 25825 A/80

Int. Cl.³ H02H *7/20*

U.S. Cl. 361—18 **2 Claims**



1. An electric power generator for motor vehicles comprising an alternator having rotor windings which are connected to a rectifier circuit having two output terminals which constitute the generator output; said alternator further having an excitation winding which is connected in series with a controlled electronic switch to said output terminals; said generator further comprising an electronic regulator connected to said output terminals and to a terminal which is connected to said electronic switch for controlling said electronic switch, said electronic regulator opening said electronic switch when an output voltage of said generator exceeds a predetermined value; said generator further comprising a protective device means for protecting against voltage transients due to a battery disconnection, said protective device means being connected in parallel to said excitation winding and comprising a semiconductor circuit;

wherein said semiconductor circuit comprises a Zener diode connected in series with a semiconductor diode and wherein said regulator further comprises an additional output terminal having a control signal which appears when said output voltage of said generator exceeds a predetermined alarm level which is higher than said predetermined value and wherein said semiconductor circuit further comprises a normally closed electronic switch connected in parallel with said Zener diode and having its control terminal connected to said additional regulator output so as to control the shorting of said Zener diode in dependence upon said output voltage of said generator.

4,455,586

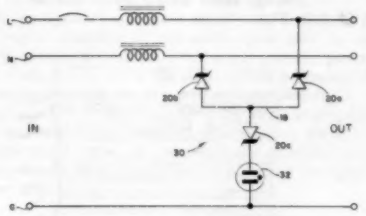
HIGH VOLTAGE FILTERING AND PROTECTION CIRCUIT

Thomas McCartney, Deerfield, Ill., assignor to ONEAC Corporation, Bannockburn, Ill.

Continuation-in-part of Ser. No. 200,432, Oct. 24, 1980, abandoned. This application Apr. 15, 1982, Ser. No. 368,513

Int. Cl.³ H02H *3/20*

U.S. Cl. 361—56 **6 Claims**



1. A protection circuit for an AC system having a live conductor, a neutral conductor, a ground conductor, and a breaker connected in either the neutral or live conductor characterized by the provision of at least three transient protection devices and a gas discharge tube, a first of said transient protection devices being connected between a common node and said neutral conductor, a second of said transient protection devices being connected between said common node and said live conductor, said third transient protection device and said gas discharge tube being connected in series between said common node and said ground conductor, each of said transient protection devices having bi-directional clamping characteristics for conduction in each direction when the voltage across said transient protection devices exceeds a predetermined voltage.

4,455,587

ELECTRONIC CONTROL CIRCUIT FOR THE FORMATION OF A MONOSTABLE SWITCHING BEHAVIOR IN A BISTABLE RELAY

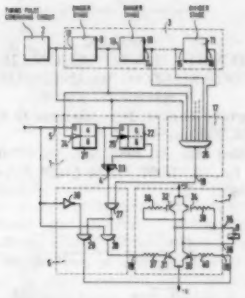
Erwin Potthof, Rothenbach, and Tilmann Kruger, Neunkerchen, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Fed. Rep. of Germany

Filed Jul. 22, 1982, Ser. No. 400,969

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1981, 3130242

Int. Cl.³ H01H *47/00*

U.S. Cl. 361—160 **7 Claims**



1. In an electronic control circuit for the formation of a monostable switching behavior in a bistable relay, including a logic circuit for the conversion of binary input signals into control signals for a switching circuit, through which the direction of current flow is reversible within the relay, said relay being switchable at each status change of the input signal; the improvement comprising a timing pulse generating circuit including an at least single-stage divider circuit; and interrogating circuit for receiving said input signal so as to generate first control signals immediately after each status change of the input signal and in synchronism with a predetermined timing pulse, said switching circuit including a bridge circuit controlled by said first control signals for supplying said relay with short power pulses whose polarity is reversible through said control signals.

4,455,588

ELECTRONICAL UNLOCKING METHOD AND SYSTEM

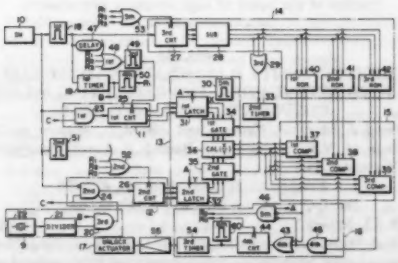
Haruo Mochida, Yokohama, and Keiichi Shimizu, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa and Kokusan Kinzoku Kogyo Co., Ltd., Tokyo, both of, Japan

Filed Apr. 29, 1982, Ser. No. 373,285

Claims priority, application Japan, Apr. 30, 1981, 56-66012

Int. Cl.³ E05B *49/00*

U.S. Cl. 361—172 **27 Claims**



1. An electronic unlocking system for operating an unlocking mechanism to unlock, for instance, a door, which comprises:

(a) a switch for generating an unlocking signal including a series of on-time intervals and off-time intervals when closed or opened manually;

(b) a first counting unit connected to said switch for counting respective time intervals during which said switch is kept turned on and outputting signals indicative of on-time interval values X;

(c) a second counting unit connected to said switch for counting respective time intervals during which said switch is kept turned off and outputting signals indicative of off-time interval values Y;

(d) a memory unit connected to said switch for storing respective reference values Xo/Yo and outputting the respective reference values in response to respective on-time signals output by said switch;

(e) a calculating unit connected to said first and second counting units for dividing respective numerical values X output by said first counting unit by respective numerical values Y output by said second counting unit and outputting signal indicative of respective divided values X/Y;

(f) a comparing unit connected to said calculating unit and said memory unit for comparing the respective numerical values X/Y calculated by said calculating unit to the respective reference values Xo/Yo stored in said memory unit and outputting signals whenever the respective calculated values X/Y agree with the respective reference values Xo/Yo;

(g) a third counting unit connected to said comparing unit for counting the number of the signals output by said comparing unit and outputting an unlocking command signal when the number counted by said third counting unit reaches a predetermined value; and

(h) an unlocking actuator connected to said third counting unit for operating the unlocking mechanism when energized in response to the unlocking command signal output from said third counting unit,

whereby an unlocking mechanism can be operated by repeatedly depressing and releasing a single switch in accordance with predetermined on-time and off-time interval relationships.

4,455,589

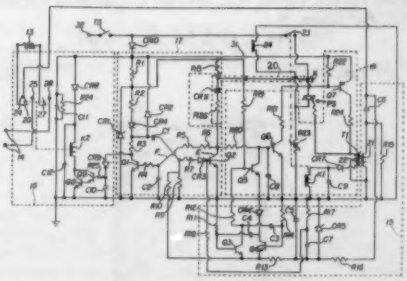
FUEL VALVE LATCH OUT SYSTEM

William J. Riordan, Shrewsbury, and Charles Collins, North Grafton, both of Mass., assignors to Kidde, Inc., Clifton, N.J.

Filed Jul. 6, 1982, Ser. No. 395,863

Int. Cl.³ H01H *47/22*

U.S. Cl. 361—190 **19 Claims**



1. An electrical control system comprising;

a source of electrical power;

an electrical load;

power switch means coupled between said source and said load and having alternate circuit open and circuit closed conditions;

closure means for activating said power switch means to said circuit closed condition to produce power transmission between said source and said load;

condition responsive control means for producing a closure signal that activates said closure means to produce said closed circuit condition in response to a given condition;

protective switch means connected in series with said power switch means and activated from a circuit open to a circuit closed condition in response to said closure signal; and

sensing circuit means for producing a fault signal in response to said closed condition of said power switch means and a simultaneous circuit open condition of said protective switch means.

4,455,590

MULTILAYER CERAMIC DIELECTRIC CAPACITORS

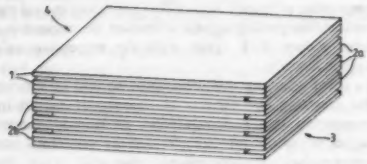
John H. Alexander, Bishop's Stortford, England, assignor to ITT Industries, Inc., New York, N.Y.

Filed Feb. 17, 1983, Ser. No. 467,533

Claims priority, application United Kingdom, Mar. 30, 1982, 8209285

Int. Cl.³ H01G *1/00, 13/00*

U.S. Cl. 361—306 **14 Claims**



11. A multilayer ceramic dielectric capacitor comprising:

a plurality of ceramic dielectric layers;

electrodes located in between the layers and extending to one of the ends of the layers;

porous nonconductive end terminations located on the ends of the layers;

a sulphide layer located on the porous end terminations; and

a lead conductive coating impregnated in the sulphided porous end terminations.

4,455,591

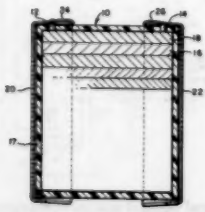
MEANS AND A METHOD FOR CONVERTING FINISHED ELECTRICAL COMPONENTS WITH TERMINAL LEADS TO ELEMENTS HAVING PLANAR TERMINATIONS

Bernard Lavene, Ocean, N.J., assignor to Electronic Concepts, Inc., Eatontown, N.J.

Filed Feb. 3, 1982, Ser. No. 348,401

Int. Cl.³ H01G *1/14*

U.S. Cl. 361—310 **10 Claims**



1. A capacitor for use in solder reflow applications comprising:

(a) an encapsulated finished capacitor having a capacitor element completely encapsulated within a casing with a first and a second terminal lead extending from the casing:

(b) a first and a second box-shaped metal end cap individually positioned at opposite ends of the casing and not in contact with the capacitor element, respectively adjacent to and substantially surrounding said first and second terminal leads;

(c) each of said first and second leads conductively adhesively secured to and terminated at each of the respectively adjacent first and second metal end caps to thereby secure the end caps in place on the casing together with the adhesive effect of the casing with the end caps free of other mechanical coupling to the casing.

4,455,592

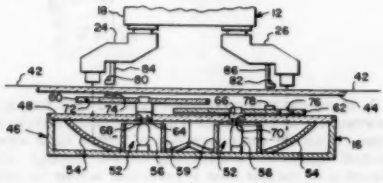
HIGH INTENSITY ILLUMINATION LIGHT TABLE WITH ATTENUATING MEANS COUPLED TO RHOMBOID ARMS

Ronald J. Martino, Geneva, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Mar. 21, 1983, Ser. No. 477,046

Int. Cl.³ G09F *13/04*; G02B *21/06*

U.S. Cl. 362—97 **7 Claims**



1. A high intensity light table for transilluminating film for viewing with microscope optics supported by rhomboid arms, said light table comprising:

(a) a housing having a light transmitting surface;

(b) illuminator means positioned in said housing for providing high intensity illumination;

(c) reflector means disposed in said housing relative to said illuminator means such that when said illuminator means is energized said high intensity illumination is transmitted to said light transmitting surface;

(d) means rotatably mounted to said housing between said light transmitting surface and said illuminator for at least partially attenuating said illumination, said attenuating means including means therein for passing unattenuated at least a portion of said high intensity light; and;

(e) means secured to said attenuating means responsive to movement of said rhomboid arms, whereby rotation of said rhomboid arms produces a corresponding rotation of said attenuating means said means for passing at least a portion of the beam of high intensity illumination.

4,455,593

HIGH INTENSITY ILLUMINATION LIGHT TABLE WITH ATTENUATING AND REFLECTING MEANS COUPLED TO RHOMBOID ARMS

Ronald J. Martino, Geneva, and Alfred L. Shawcross, Lima, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Mar. 21, 1983, Ser. No. 477,050

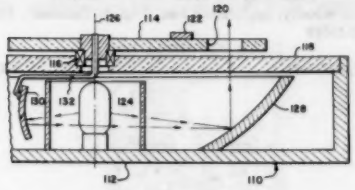
Int. Cl.³ G09F *13/04*; F21V *7/00*; G02B *21/06*

U.S. Cl. 362—97 **6 Claims**

1. A high intensity light table for transilluminating film for viewing with microscope optics supported by rhomboid arms, said light table comprising:

(a) a housing having a light transmitting surface;

(b) illuminator means positioned in said housing for providing high intensity illumination;
(c) reflector means disposed in said housing relative to said illuminator means such that when said illuminator means is energized said high intensity illumination is transmitted to said light transmitting surface;
(d) means rotatably mounted to said housing between said light transmitting surface and said illuminator for at least partially attenuating said illumination, said attenuating means including means therein for passing unattenuated at least a portion of said high intensity light;



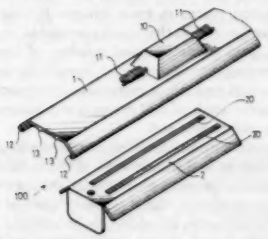
(e) means secured to said attenuating means responsive to movement of said rhomboid arms, whereby rotation of said rhomboid arms produces a corresponding rotation of said attenuating means and said means for passing at least a portion of the beam of high intensity illumination; and
(f) auxilliary reflector means coupled to said attenuating means to rotate corresponding therewith, said auxilliary reflector means reflecting additional illumination given off by said illumination means through said means in said attenuating means as said attenuating means is rotated.

4,455,594

EXTENSION, FOLDING OR DETACHABLE LAMP SHADE

Tai-Her Yang, 5-1 Tay Pyng St., Shi Hwu Jenn, Jang Huah Shiann, Taiwan

Filed Mar. 2, 1983, Ser. No. 471,530
Int. Cl.³ F21P *1/00*
U.S. Cl. 362—252 **16 Claims**



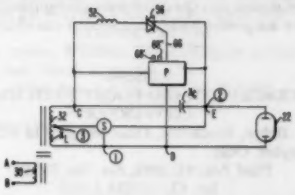
1. A folding lamp shade structure for supporting and providing power to a conventional fluorescent light tube comprising:
a main lamp shade having first and second ends;
at least one auxiliary lamp shade;
connecting means for rotatably connecting a first end of said auxiliary lamp shade to said first end of said main lamp shade, said connecting means permitting said auxiliary lamp shade to rotate between at least a first and a second position, said auxiliary shade not adding to the axial length of said lamp shade structure when in said first position, the length of said lamp shade structure being substantially equal to the length of said conventional fluorescent light tube when said auxiliary shade is in said second position;
a plurality of fluorescent tube connecting socket means, at least one being attached to a second end of said auxiliary shade and at least one being attached to said second end of said main lamp shade, for physically retaining and for coupling electric power to said light tube;
electrical transformer means for providing an electrical supply voltage; and
extensible electrical connecting means for flexibly electrically coupling said fluorescent tube socket means to said transformer means.

4,455,595

PACKAGED ADD-ON DEVICE FOR LEAD-TYPE BALLAST AND LUMINAIRE WHICH INCORPORATES SUCH PACKAGED ADD-ON DEVICE

Joseph C. Engel, Monroeville; Richard E. Hanson, Coraopolis, both of Pa.; Kenneth W. Simms, Tallulah, La., and Robert J. Spreadbury, Murrysville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sep. 2, 1982, Ser. No. 414,275
Int. Cl.³ F21K *2/00*
U.S. Cl. 362—265 **7 Claims**



1. In combination with a luminaire for a high-intensity-discharge high-pressure sodium lamp, said luminaire comprising a housing member and means for mounting said housing member, lamp socket means affixed to said housing member and adapted to receive and retain in operative position the lamp to be operated, means for directing in a predetermined fashion the light generated by an operating lamp, power input terminals affixed to said housing member and adapted to be connected to a source of electrical power, and ballast means retained within said housing member and comprising a lead-type ballast apparatus having an inductive reactance portion and a capacitance reactance portion, said inductive reactance portion comprising a current-limiting high-reactance transformer means having primary winding means coupled to said luminaire power input terminals and secondary winding means terminating in secondary winding means output terminals, and said capacitive reactance portion comprising separate capacitor means retained in a first can-shaped member having capacitor terminal members affixed thereto, and said capacitor means terminal members electrically coupled in circuit between one of said secondary winding means output terminals and said luminaire socket member, said luminaire is modified by an add-on device which modifies said lead-type ballast apparatus and which comprises: additional inductance means and controlled AC switching means coupled in series circuit, with said series-connected additional inductance means and said controlled AC switching means coupled in parallel with said capacitor means, said AC switching means having a high impedance open position and a low impedance closed position and control terminal means, which said AC switching means is open, said modified lead-type ballast apparatus delivers a first level of current to an operating lamp, and when said AC switching means is closed, said modified lead-type ballast apparatus delivers a lower level of current to an operating lamp; and sensing and programming means operable to sense at least one predetermined lamp operating parameter and to generate an output control signal which is indicative of a predetermined parameter desired for said operating lamp, and said sensing and programming means having an output coupled to the control terminal means of said AC switching means to control the relative proportion of time said AC switching means is open and closed in order to control

in programmed fashion the predetermined lamp operating parameter desired for said operating lamp; improved packaging for said add-on device, which comprises:

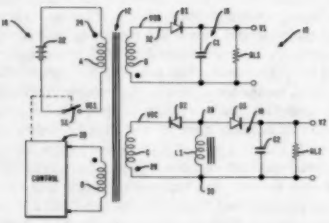
a second can-shaped member in which said add-on device is contained, said second can-shaped member affixed within said luminaire housing member and having exterior dimensions similar to the exterior dimensions of said first can-shaped member, add-on device terminal means affixed to an exterior end portion of said second can-shaped member, said additional inductance means of said add-on device occupying the major portion of the space within said second can-shaped member, a mounting board to which said sensing and programming means and said AC switching means of said add-on device are affixed, said mounting board is also contained within said second can-shaped member proximate said add-on device terminal means, said sensing and programming means together with said AC switching means and said additional inductance means are coupled in circuit with said add-on device terminal means, said add-on device terminal means are coupled in circuit with said lead-type ballast apparatus and said lamp socket means, and the components comprising said add-on device are potted within said second can-shaped member.

4,455,596

FLYBACK-FORWARD BOOST SWITCHMODE CONVERTER

George J. Baker, Brookville, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Jun. 14, 1982, Ser. No. 387,997
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—21 **4 Claims**



1. A high frequency power converter circuit comprising:

means for transforming electrical current having a primary, at least one secondary winding of a first type, and at least one secondary winding of a second type, said secondary windings of said first and second types being in flux-coupling relationship with said primary;

a source of electric current operatively coupled to said primary to flow therethrough;

means for periodically interrupting the flow of current through said primary to provide on and off periods therefor;

a flyback circuit operatively associated with said secondary winding of said first type to provide a first output from said power converter circuit;

a secondary circuit having an output separate from said first output and also having a first unidirectional device and means for storing energy being series connected with said secondary winding of said second type, said unidirectional device being positioned in said secondary circuit to enable said means for storing energy to store energy from said transforming means only during a said on period; said secondary circuit having a junction between said unidirectional device and said means for storing energy;

said flyback circuit having a unidirectional device positioned therein to enable current to flow to said first output only during a said off period; and

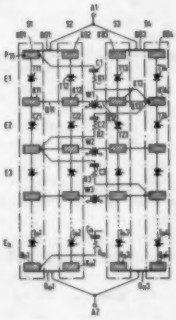
a second unidirectional device being coupled to said junction between said first unidirectional device and said means for storing energy to enable current to flow to said output of said secondary circuit only during a said off period.

4,455,597

THYRISTOR MATRIX HAVING AT LEAST FOUR COLUMNS

Lovro Vukasovic, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 10, 1982, Ser. No. 376,571
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1981, 3123019
Int. Cl.³ H02M *7/00*
U.S. Cl. 363—68 **6 Claims**



1. A thyristor matrix arrangement of the type having at least four columns, each of the columns being formed of n thyristors connected in series with each other, each of the thyristors having a cathode electrode and an anode electrode, the thyristor matrix arrangement further comprising:

a plurality of junction means in each column, each of said junction means serially interconnecting an associated two of the thyristors at selectable similar ones of their respective cathode and anode electrodes, consecutive pairs of said junction means in each column having a predetermined number of the thyristors connected in series therebetween, said predetermined number of the series thyristors having a predetermined overall forward conduction direction to form a respective interjunction current path between each of said respective consecutive pairs of said junction means; and

cross-connection means coupling corresponding ones of said junction means in different ones of the columns for forming at least one primary current path through the thyristor matrix arrangement, said primary current path being formed of the series combination of selected ones of said interjunction current paths from different ones of the columns, and said cross-connection means.

4,455,598

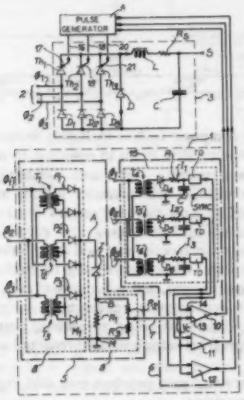
AUTOMATIC DEVICE FOR COMPENSATION OF AC POLYPHASE POWER LINE VOLTAGE VARIATIONS IN AC-DC CONVERTERS

Gerard Andre, Ecquevilly, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Jan. 29, 1982, Ser. No. 343,936
Claims priority, application France, Feb. 4, 1981, 81 02085
Int. Cl.³ H02P *13/24*
U.S. Cl. 363—87 **5 Claims**

1. A circuit arrangement for the compensation of voltage variations of an AC polyphase electrical power line for an AC-DC converter, comprising a trigger rectifier for each

phase of the power line, each trigger rectifier having an input connected to one of the phases of the polyphase power line and adapted to be controlled by trigger pulses which ensure control of the firing angle of the trigger rectifier; a pulse generator having control inputs and associated outputs for supplying said trigger pulses in adjustable periods for each phase of the power line; means for determining the voltage variations at the input of each trigger rectifier, the determining means comprising, for each trigger rectifier, rectifying means connected to the power line for rectifying the input voltage, and sampling means connected to the rectifying means for supplying a control voltage having a fraction of the predetermined value of said rectified voltage; compensating means connected to an output of the



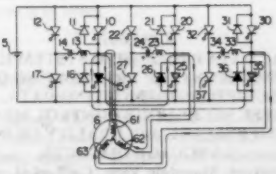
determining means for compensating the firing angle of each trigger rectifier, said compensating means comprising, for each trigger rectifier, a comparator having a first input connected to an output of the sampling means which supplies the control voltage, and synchronizing means connected to the power line for supplying a synchronizing signal which forms the envelope of trigger pulses to the trigger rectifiers and which establishes a linear relation between the variations in the firing angle of each trigger rectifier and the variations of the output voltage at the output thereof, the synchronizing means having outputs connected to second inputs of the comparators; and means for applying the output signals of the comparators to control inputs of the pulse generator so as to adjust the period of the trigger pulses applied to each trigger rectifier.

4,455,599

PULSE WIDTH MODULATION INVERTER

Kaoru Tamura, and Hidetoshi Aizawa, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 5, 1982, Ser. No. 365,598
Claims priority, application Japan, Apr. 8, 1981, 56-51823
Int. Cl.³ H02M 1/06
U.S. Cl. 363—138 **4 Claims**



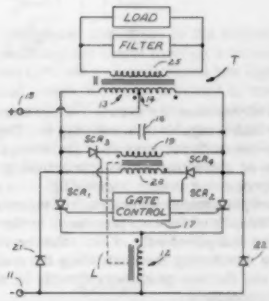
1. A method of halting a pulse width modulation inverter in which an inverter main circuit comprising six main thyristors arranged in a three-phase bridge connection, commutating diodes each arranged in an inverse-parallel connection with a corresponding one of said main thyristors, and forced commutation circuits for cummutating the main thyristors forcedly, each said forced commutation circuit comprising an auxiliary thyristor, a commutating inductor and a commutating capacitor, connected with a corresponding one of said main thyristors, is controlled by pulse width modulation signals, wherein, at a time when it is determined that a logical condition exists that all inverter halting signals and pulse width modulation signals applied to three positive side or three negative side main thyristors of said six main thyristors arranged in the three-phase bridge connection are in their high level states, the application of all of said pulse width modulation signals to said main thyristors is stopped so that said positive side or negative side main thyristors in their conduction states are forcedly commutated to halt said inverter.

4,455,600

SINGLE PHASE, DOUBLE-ENDED THYRISTOR INVERTER WITH CHOKE-COUPLED IMPULSE COMMUTATION

Howard H. Bobry, Westlake, Ohio, assignor to Lortec Power Systems, Inc., North Ridgeville, Ohio

Filed Jun. 7, 1982, Ser. No. 385,521
Int. Cl.³ H02M 7/515
U.S. Cl. 363—139 **2 Claims**



1. In a single-phase DC to AC inverter having an output transformer with primary and secondar windings, means connecting a center tap on said primary winding to one terminal of a source of direct current, a pair of gate-controlled main rectifier means connected between the opposite ends of said primary winding and through an inductor to the other terminal of said source of direct current, a commutating capacitor connected across the primary winding, and means for alternatingly gating said pair of main rectifier means,

the improvement which comprises means for varying the voltage across said primary winding by limiting the duration of current flow through said main rectifier means after gating, said means comprising,

at least two gate-controlled auxiliary rectifier means connected in parallel across said primary winding in reverse directions,

first inductive means series-connected with one of said auxiliary rectifier means,

second inductive means series-connected with the other of said auxiliary rectifier means,

third inductive means connected between said pair of main rectifier means and said other terminal of said source of direct current,

said first, second, and third inductive means being inductively coupled together, and

means for gating said auxiliary rectifier means while each of

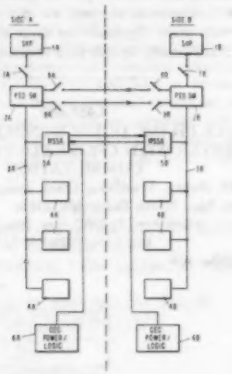
said pair of main rectifier means is alternatingly conducting current therethrough.

4,455,601

CROSS CHECKING AMONG SERVICE PROCESSORS IN A MULTIPROCESSOR SYSTEM

Robert E. Griscom, and Thomas A. Stranko, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1981, Ser. No. 336,123
Int. Cl.³ G06F *15/16, 11/00*
U.S. Cl. 364—200 8 Claims



1. In a multiprocessing system with two service processors each of which is capable of monitoring and controlling a different one of two active processors of the multiprocessing system, an improved means for allowing monitoring and controlling the multiprocessing system comprising:

cross coupling means joining each of the two service processors to each of the two processors in the multiprocessing system indepdendently of the other service processor to allow monitoring the controlling the multiprocessor system and the two processors directly by either of the service processors;

selection means in said cross coupling means for selecting one service processor out of the two service processors and insuring that only said one service processor operates in an active status where it assumes control of the multiprocessing system and both of the two processors, and that the other service processor of said two service processors is not in control of the multiprocessing system or either of the two processors but is in a backup status where it is available to assume said active status in case of malfunction of said one service. processor; and

reconfiguration means in said cross coupling means responsive to detection of one or more of a set of conditions of the service processor in active status to cause the two service processors to exchange their active and backup status with respect to the multiprocessing system and the two processors.

4,455,602

DIGITAL DATA PROCESSING SYSTEM HAVING AN I/O MEANS USING UNIQUE ADDRESS PROVIDING AND ACCESS PRIORITY CONTROL TECHNIQUES

Ward Baxter, III, Carlisle, Mass.; William N. Coder, Raleigh, and Steven M. Haeffele, Cary, both of N.C., assignors to Data General Corporation, Westboro, Mass.

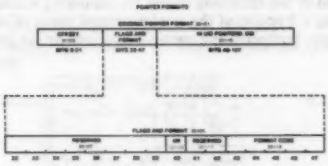
Filed May 22, 1981, Ser. No. 266,402
Int. Cl.³ G06F *3/00*
U.S. Cl. 364/200 7 Claims

4,455,603

SYSTEM FOR RESOLVING POINTERS IN A DIGITAL DATA PROCESSING SYSTEM

Richard G. Bratt, Wayland, Mass.; Lawrence H. Katz, Oregon City, Oreg., and Douglas M. Wells, Chapel Hill, N.C., assignors to Data General Corporation, Westboro, Mass.

Filed May 22, 1981, Ser. No. 266,416
Int. Cl.³ G06F *9/22*
U.S. Cl. 364—200 14 Claims



1. In a digital computer system including memory means for storing and providing data items in response to memory commands, each said memory command including an address specifying a location in said memory means, and processor means connected to said memory means for providing said memory commands and providing and receiving said data items in response to instructions of said data items executed by said processor means while performing an execution of a sequence of said instructions, and wherein said data items further include pointers representing represented addresses of said addresses, said pointers including unresolved pointers containing said data items from which said represented addresses may be derived,

means for resolving said pointers into said represented addresses comprising:

(1) ordinary unresolved pointers of said unresolved pointers;

(2) a pointer resolution sequence of said sequences for receiving any said ordinary unresolved pointer, deriving said represented address using said contained data items, and returning said represented address;

(3) pointer translation means in said processor means responsive to said pointers for translating each said pointer into said represented address; and

(4) call-return operation execution means in said processor means responsive to operation of said processor means for commencing said execution of any said sequence and terminating said execution, said call-return operation execution means responding to operation of said pointer translation means when said pointer translation means receives any said ordinary unresolved pointer by providing said received ordinary unresolved pointer to said pointer resolution sequence, causing said processor means to execute said pointer resolution sequence, and providing said represented address returned by said pointer resolution sequence to said pointer translation means.

4,455,604

DIGITAL DATA PROCESSING SYSTEM HAVING ADDRESSING MEANS FOR TRANSLATING OPERANDS INTO DESCRIPTORS IDENTIFYING DATA, PLURAL MULTILEVEL MICROCODE CONTROL MEANS, AND ABILITY TO EXECUTE A PLURALITY OF INTERNAL LANGUAGE DIALECTS

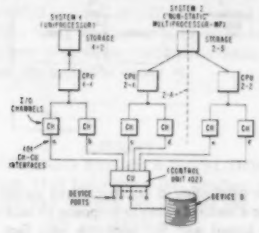
John K. Ahlstrom, Mountain View, Calif. et al., assignors to Data General Corporation, Westboro, Mass.

Filed May 22, 1981, Ser. No. 266,422
Int. Cl.³ G06F *7/00*
U.S. Cl. 364/200 32 Claims

4,455,605
METHOD FOR ESTABLISHING VARIABLE PATH GROUP ASSOCIATIONS AND AFFILIATIONS BETWEEN "NON-STATIC" MP SYSTEMS AND SHARED DEVICES

Roger L. Cormier, Pleasant Valley; Robert J. Dugan, Hyde Park; Richard R. Guyette, Hopewell Junction; Paul J. Wanish, and Carl Zeitler, Jr., both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 23, 1981, Ser. No. 286,396
Int. Cl.³ G06F *3/04, 13/00*
U.S. Cl. 364—200 **11 Claims**



1. A method for conducting path-independent data communications between a central processing (host) system and an I/O device through various I/O circuit paths, comprising:

establishing a path group comprising a plurality of said paths, said host system and said device, and thereafter extending any reserve affiliation or other allegiance thereafter established between said host system, said device, and one path in the group, to each path in the group;

establishing a reserve affiliation or other allegiance over one path in said group and thereby causing said affiliation or allegiance to extend to each path in said group;

conducting data communications over various paths in said group while said reserve affiliation or other allegiance is in effect;

modifying said path group while said reserve affiliation or other allegiance is in effect by transmitting a signal over a path that is not in said group but inhibiting the modifying step if the device is transmitting data on one of the paths of the group; said modifying step including one of the steps of disbanding the path group, adding a path to the group, and resigning a path from the group,

realigning said reserve or other allegiance in a predetermined manner relative to a modified group; said realigning step including one of the steps of applying reserve affiliation or other allegiance only to the one path on which said disbanding step has been conducted, extending said reserve affiliation or other allegiance to each path included in said modified group, and removing said reserve affiliation or other allegiance from any path which may have been deleted from said original group, and

conducting data communications over one or more paths in said modified group while said realigned affiliation or allegiance is in effect.

4,455,606
LOGIC CONTROL SYSTEM FOR EFFICIENT MEMORY TO CPU TRANSFERS

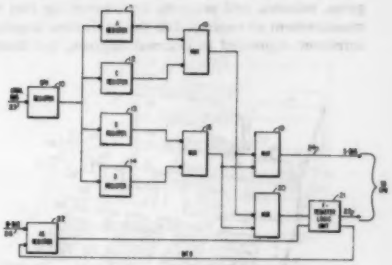
David E. Cushing, Chelmsford; Richard A. Lemay, Carlisle; Philip E. Stanley, Westboro, and William E. Woods, Natick, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sep. 16, 1981, Ser. No. 302,902
Int. Cl.³ G06F *3/00, 7/00, 13/00*
U.S. Cl. 364—200 **4 Claims**

1. A logic control system for accomodating the transfer of binary information including CPU instructions from a memory system to a central processing unit (CPU), which comprises:

(a) first, seoond, third and fourth register means in electrical communication with said memory system for receiving and storing said binary information, each of said register means being operable to store logic signals representative of a single length word;

(b) a first multiplexer connected to the outputs of said first and second register means through a first tristate bus and to said CPU via a first control bus, logic signals on said first tristate bus being provided by said first multiplexer to said CPU in response to a logic selection signal of a given level;



(c) a second multiplexer connected to the outputs of said third and fourth register means through a second tristate bus and to said CPU via a second control bus, logic signals on said second tristate bus being provided by said second multiplexer to said CPU in response to said logic selection signal being the complement of said given level;

(d) means for providing said logic selection signal to said first and second multiplexers in response to a control signal from said CPU; and

(e) means for sequentially providing outputs of said first, second, third and fourth register means onto said first and second tristate busses.

4,455,607
PROGRAMMABLE CALCULATOR HAVING KEYS FOR PERFORMING ANGULAR MEASUREMENT UNIT CONVERSION

Robert E. Watson; Jack M. Walden, and Charles W. Near, all of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 239,867, Mar. 2, 1981, Pat. No. 4,384,328, which is a continuation of Ser. No. 085,342, Oct. 16, 1979, abandoned, which is a continuation of Ser. No. 850,329, Nov. 10, 1977, abandoned, which is a division of Ser. No. 535,750, Dec. 23, 1974, Pat. No. 4,063,221, which is a division of Ser. No. 153,437, Jun. 15, 1971, Pat. No. 3,859,635. This application Feb. 15, 1983, Ser. No. 466,449
Int. Cl.³ G06F *3/02, 3/14, 5/00*
U.S. Cl. 364—200 **1 Claim**

1. An electronic calculator comprising:

keyboard input means including a plurality of keys for entering information into the calculator;

first memory means, including a plurality of storage registers into which information may be written and from which information may be read;

second memory means for storing routines to be executed by the calculator in performing selected functions;

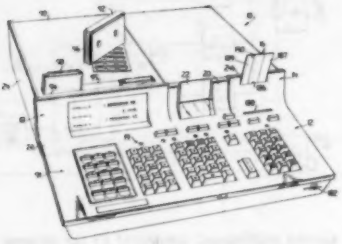
processing means, coupled to said keyboard input means and first and second memory means, for executing selected ones of the routines stored in the second memory means to perform certain functions employing information from one or both of the keyboard input means and first memory means; and

output display means, coupled to said processing means, for providing a visual output indication of the results of functions performed by the calculator;

said keyboard input means including first control means for specifying a first angular measurement conversion function and further including second control means for specifying a second angular measurement conversion function;

said output display means being operative for displaying the contents of a plurality of the storage registers of said first memory means;

said processing means including logic means responsive to actuation of said first control means, following entry from the keyboard input means of three data items representing an angular measurement expressed, respectively, in degrees, minutes, and seconds, for converting that angular measurement so expressed to the equivalent angular measurement expressed in decimal degrees, for storing the



resultant angular measurement expressed in decimal degrees in a specified one of the storage registers of said first memory means, and for causing that resultant angular measurement to be visually displayed on said output display means;

said logic means being further responsive to actuation of said second control means, following entry from the keyboard input means of a data item representing an angular measurement expressed in decimal degrees, for converting that angular measurement so expressed to the equivalent angular measurement expressed in degrees, minutes, and seconds, for storing the resultant angular measurement expressed in degrees, minutes, and seconds in a specified three of the storage registers, respectively, of said first memory means, and for causing that resultant angular measurement to be visually displayed on said output display means.

4,455,608

INFORMATION TRANSFERRING APPARATUS

Seigo Suzuki, Yokohama; Seiji Eguchi, Kawasaki, and Yoshiaki Moriya, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation-in-part of Ser. No. 125,571, Feb. 28, 1978, abandoned, which is a continuation of Ser. No. 960,181, Nov. 8, 1978, abandoned, which is a continuation of Ser. No. 732,727, Oct. 15, 1976, abandoned. This application Dec. 8, 1981, Ser. No. 328,525

Claims priority, application Japan, Oct. 15, 1975, 50-123239

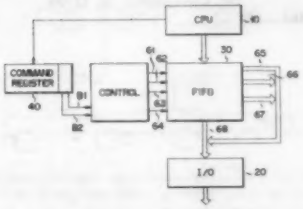
Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **5 Claims**

1. An information transferring apparatus comprising:

first and second information processing units, said first information processing unit for generating a program information signal and a series of information words to be transferred from said first information processing unit to said second information processing unit;

a first-in first-out fixed length stack comprising a series of storage locations including a first storage location, a plurality of intermediate storage locations and a last storage location for buffering and normally transferring said information words from said first information processing unit to said second information processing unit by the shifting of the information words serially through said plurality of storage locations from said first storage location to said last storage location;



means for producing a depth control signal having a first value or a second value in response to said program information signal and for applying said first value of said values of said depth control signal to said first-in first-out stack to designate one of said series of storage locations of said first-in first-out stack for transferring a said information word to said second information processing unit; and

means responsive to said second value of said depth control signal for controlling the transfer of the information word stored in said designated storage location of said first-in first-out stack to said second information processing unit.

4,455,609

APPARATUS FOR REALTIME FAST RECONSTRUCTION AND DISPLAY OF DOSE DISTRIBUTION

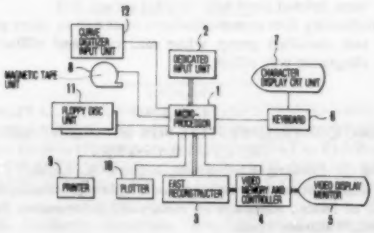
Kiyonari Inamura; Yasuo Ueda; Nobumasa Furushima, and Keisuke Shigaki, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 10, 1981, Ser. No. 301,012

Claims priority, application Japan, Sep. 17, 1980, 55-129549

Int. Cl.³ G01T *1/16*

U.S. Cl. 364—414 **3 Claims**



1. Apparatus for realtime fast reconstruction and display of dose distribution which calculates the absorbed dose in an

irradiated area defined by coordinates and displays the results of the calculation, said apparatus comprising:

input means capable of setting parameters in the form of time-continuous quantities;

a dedicated digital computer serving to control the input by said input means;

dedicated realtime fast reconstruction means for calculating the absorbed dose for each coordinate in the exposed area at a high speed by decomposing calculation formulae necessary for obtaining isodose curves on the basis of the parameter set in said input means and effecting parallel calculation of the decomposed formulae, thereby obtaining the isodose curves; and

video display means for storing and displaying the isodose curves classified in terms of different isodose levels;

said calculation being continuously repeated to provide a motion picture of the dose distribution when the magnitude of said parameters is varied.

4,455,610

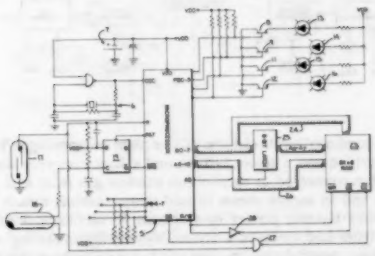
SELF-CONTAINED ESTROUS DETECTION TAG

James A. Rodrian, 1123 Lake Shore Rd., Grafton, Wis. 53024

Filed Feb. 4, 1982, Ser. No. 345,580

Int. Cl.³ A61B *5/10*

U.S. Cl. 364—415 **11 Claims**



1. A self-contained tag for indicating estrus in an animal to which it is attached, the combination comprising:

a motion detector for sensing significant animal movements;

current activity counter means coupled to the motion detector for accumulating a count indicative of the animal activity over a current time period;

reference activity counter means coupled to the motion detector for accumulating a count indicative of the animal activity over a reference time period;

indicator means for providing an indication of increased animal activity when energized; and

comparator means coupled to the current activity counter means and the reference activity counter means for comparing the magnitudes of their counts and energizing the indicator means when the ratio of the current activity over the reference activity exceeds a preselected amount.

4,455,611

MULTIPLIER FOR MULTIPLYING N-BIT NUMBER BY QUOTIENT OF AN INTEGER DIVIDED BY AN INTEGER POWER OF TWO

Kerns H. Powers, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 262,619, May 11, 1981, abandoned, which is a continuation-in-part of Ser. No. 230,384, Feb. 2, 1981, abandoned. This application Aug. 26, 1982, Ser. No. 411,906

Int. Cl.³ G06F *7/52*

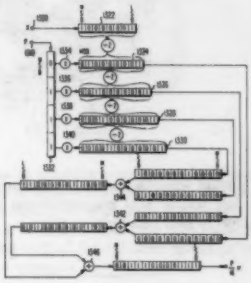
U.S. Cl. 364—760 **7 Claims**

1. A digital multiplier for multiplying together first and second numbers, when the first number is the quotient of an integer divided by an integer power of two and the second number has n bits, the multiplier comprising:

a first n-bit register coupled to receive said second number;

a second register having n+1 bits, said second register being coupled to said first for receiving said second number in the n least significant stages of said second register for effectively dividing the value of said second number by two to form a third number;

a third register having n+2 bits coupled to said second register for receiving said third number in the n+1 least significant stages of said third register for effectively dividing the value of said third number by two to form a fourth number;



a fourth register coupled for receiving the numerator of said first number, said fourth register having at least two stages for representing at least a portion of the value of said numerator in the form of one of two preassigned states which may be assumed by said stages,

summing means; and

coupling means coupled to said first and second stages of said fourth register, to said second and third registers and to said summing means for enabling said summing means for controllably forming an output signal from the values of one of said third, said fourth and the sum of said third and said fourth numbers.

4,455,612

RECURSIVE ESTIMATION IN DIGITAL DISTANCE RELAYING SYSTEM

Adly A. Girgis, Raleigh, N.C., and Robert G. Brown, Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Jan. 27, 1982, Ser. No. 343,356

Int. Cl.³ H02H *3/18*; G06F *15/20*

U.S. Cl. 364—483 **10 Claims**

1. A method of digital distance relaying on an electric power transmission line comprising the steps of

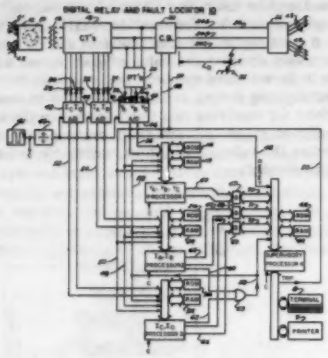
successively sampling a voltage waveform and a current waveform from said line;

electronically detecting the existence of a fault on said transmission line from data from said sampling, said sampling obtaining at least two successive pairs of postfault line current and line voltage data;

recursively electronically calculating in response to each said pair of postfault line current and line voltage data, a voltage waveform sinusoid estimate by means of an estimation procedure having at least two state variables and a current waveform sinusoid estimate by means of an estimation procedure having at least three state variables;

electronically determining whether said voltage and current waveform sinusoid estimates indicate that said fault lies within a predetermined zone; and

tripping circuit breaking means for a section of said transmission line corresponding to said zone when said voltage



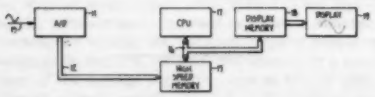
and current waveform sinusoid estimates indicate that said fault lies within said predetermined zone, in automatic response to said determining step.

4,455,613

TECHNIQUE OF RECONSTRUCTING AND DISPLAYING AN ANALOG WAVEFORM FROM A SMALL NUMBER OF MAGNITUDE SAMPLES

William E. Shoemaker, Santa Clara, Calif., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Nov. 25, 1981, Ser. No. 324,732
Int. Cl.³ G01R *23/16*
U.S. Cl. 364—487 **8 Claims**



1. A method of acquiring and displaying information of an analog waveform, comprising the steps of:

acquiring samples of the magnitude of said waveform at equal time intervals therealong,

determining the slope of the waveform at each of a plurality of successively acquired samples, the slope at each given sample point being determined from the magnitude of the two samples immediately preceding said given sample point and the magnitude of the two samples immediately following said given sample point,

determining the slope of the waveform at a point intermediate of each sampling interval, each intermediate slope being determined from the acquired magnitude and calculated slope of the acquired samples at the beginning and end of the sampling interval,

determining the magnitude of a plurality of points within the sample intervals, the points within a given sample interval being determined from the magnitude of the acquired samples at the beginning and end of the interval, their calculated slope and the calculated intermediate slope, and

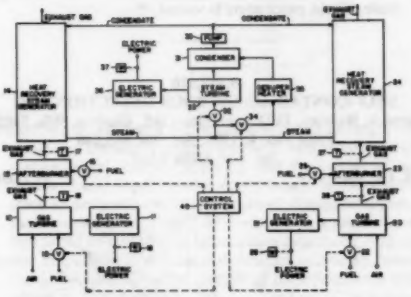
displaying the sample magnitudes and the calculated intermediate magnitudes in a manner to permit observation of a reconstructed waveform.

4,455,614

GAS TURBINE AND STEAM TURBINE COMBINED CYCLE ELECTRIC POWER GENERATING PLANT HAVING A COORDINATED AND HYBRIDIZED CONTROL SYSTEM AND AN IMPROVED FACTORY BASED METHOD FOR MAKING AND TESTING COMBINED CYCLE AND OTHER POWER PLANTS AND CONTROL SYSTEMS THEREFOR

Lyle F. Martz, Verona; Roy W. Kiscaden, Springfield, and Robert Uram, East Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 21, 1973, Ser. No. 399,790
Int. Cl.³ G06F *15/20*; F01K *23/00*; G05B *19/00*
U.S. Cl. 364—494 **46 Claims**
MICROFICHE APPENDIX INCLUDED
(61 Microfiche, 3841 Pages)



1. A combined cycle electric power plant comprising at least a gas turbine and a steam turbine and a heat recovery steam generator connected to receive hot exhaust gas from said gas turbine and to supply steam to said steam turbine, means for generating electric power in response to mechanical drive power from said turbines, a control system for operating said plant, said control system including a gas turbine control which controls the gas turbine fuel flow and a steam turbine control which operates a steam turbine inlet valve and a bypass valve to control the turbine inlet steam, and a steam generator control which controls predetermined steam generator operating conditions all including analog electric control circuitry, means for operating said turbines and said steam genearator in response to the analog circuitry outputs, means for applying operator input signals to said controls to provide for plant startup and plant load operation, and a digital computer generating output signals for application to said controls so as automatically to provide coordinated plant startup and loading operation in satisfying a startup command and a plant load demand when said computer is selected for operation in said control system.

4,455,615

INTONATION-VARYING AUDIO OUTPUT DEVICE IN ELECTRONIC TRANSLATOR

Akira Tanimoto, Kashihara, and Mitsuhiro Saiji, Kyoto, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 28, 1981, Ser. No. 315,855
Claims priority, application Japan, Oct. 28, 1980, 55-152856
Int. Cl.³ G10L *1/60*
U.S. Cl. 364—513.5 **13 Claims**

1. An electronic translator comprising:

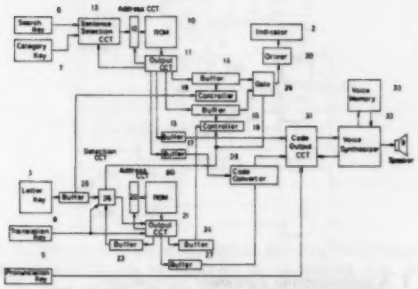
sentence generating means for providing at least one first sentence in a first language and at least one equivalent second sentence in a second language;

replacing means connected to said sentence generating means for replacing at least one changeable word in said first sentence with another word in said first language for making an altered first sentence;

word translating means connected to said replacing means and to said sentence generating means for providing a translated word in said second language equivalent to said another word to said sentence generating means for making an altered second sentence equivalent to said altered first sentence;

voice synthesizer means connected to said sentence generating means and to said word translating means for synthesizing voice output representing said altered second sentence;

voice data memory means connected to said voice synthesizer means for storing first voice data corresponding to second sentences provided by said sentence generating



means and plural sets of second voice data corresponding to each translated word provided by said word translating means, and for providing selected voice data to said voice synthesizing means;

first determining means associated with said sentence generating means for determining which first voice data corresponding to a second sentence is provided to said voice synthesizer means;

second determining means associated with said word translating means for determining which of said plural sets of second voice data corresponding to a translated word is provided to said voice synthesizer means; and

means associated with said first and second determining means for replacing a portion of said first voice data provided to said voice synthesizer means with second voice data, wherein the content of said provided second voice data is dependent upon the positions of said another word in said altered first sentence and said translated word in said altered second sentence.

4,455,616

FAST GAMMA CAMERA

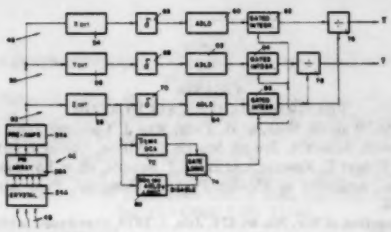
Dan Inbar, Haifa, Israel, assignor to Elscint, Ltd., Haifa, Israel

Continuation of Ser. No. 55,806, Jul. 9, 1979, abandoned. This application Nov. 18, 1981, Ser. No. 322,441

Int. Cl.³ G01J *1/20*

U.S. Cl. 364—527 **16 Claims**

1. A gamma camera having: a scintillation medium responsive to radiation stimuli for producing an exponentially decaying scintillation at a location where a radiation stimulus interacts with the medium; a photodetector system responsive to a scintillation for producing outputs; and computation circuitry responsive to such outputs for producing intrinsic signals which vary with time in substantially the same manner as said outputs, the improvement comprising: means for modifying



said intrinsic signals to produce corresponding truncated signals, the trailing end of each truncated signal being returned to substantially the baseline from which the last mentioned signal started after a period of time shorter than that required for the return of the trailing end of the intrinsic signal to which the truncated signal corresponds.

4,455,617

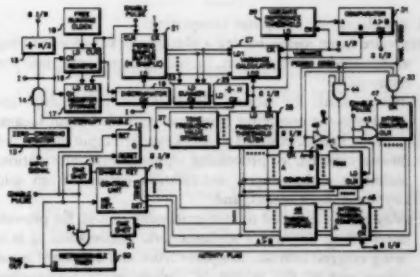
MULTIPLE SIMULTANEOUS TONE DECODER

Arman V. Dolikian, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 30, 1982, Ser. No. 412,628

Int. Cl.³ G06F *15/31;* **H04M** *1/50*

U.S. Cl. 364—724 **12 Claims**



8. A decoder for decoding serially received signals comprising:

period means for calculating the period of at least a portion of said serially received signals,

averaging means responsive to said period means for calculating an average period for said portion of said serially received signals,

variance means responsive to said averaging means for calculating the average variance of said portion of said serially received signals,

threshold means responsive to said averaging means to produce a variance threshold, and

detection means responsive to said averaging means, said threshold means and said variance means to produce a detection signal only when said average period is approximately equal to the average period of one of a group of predetermined desired periods and said average variance remains below said variance threshold for a predetermined minimum time period.

4,455,618

PROGRAMMABLE CALCULATOR

Jack M. Walden; William D. Eads; Ray J. Cozzens; John L. Bidwell; Robert A. Jewett; Martin S. Wilson; Daniel J. Griffin; Robert E. Kuseski, and Louis T. Schulte, all of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 44,421, Jun. 1, 1979, abandoned, which is a division of Ser. No. 837,771, Sep. 29, 1977, Pat. No. 4,180,854. This application Feb. 20, 1981, Ser. No. 236,394

Int. Cl.[3] **G06F** *15/02*

U.S. Cl. 364—900 **1 Claim**

1. An electronic computer comprising:

keyboard input means having a plurality of keys for entering alphanumeric information, including commands, into the computer;

memory means for storing alphanumeric information entered into the computer from said keyboard input means;

processing means, coupled to said keyboard input means and memory means, for processing alphanumeric information, including alphanumeric information entered from said keyboard input means; and

display means, coupled to said processing means, for providing a visual display of alphanumeric information as it is being entered into the computer from said keyboard input means and of the results of alphanumeric information processed by said processing means;

said keyboard input means including a plurality of user-definable keys and means for permitting the user to associate specified alphanumeric information with a selected one of said definable keys;

said computer including logic means, coupled to said processing means, said logic means being responsive to the application of operating power to the computer for causing certain predetermined alphanumeric information that is not specified by the user to be associated with one of said plurality of user-definable keys and to remain so associated therewith until such time as the user associates different alphanumeric information with said one of said plurality of user-definable keys.

4,455,619

INTERACTIVE EQUIPMENT FOR COMPUTER PROGRAMMING BY LINKAGE OF LABELED BLOCK REPRESENTATIONS OF ARITHMETIC/LOGICAL SUBPROGRAMS

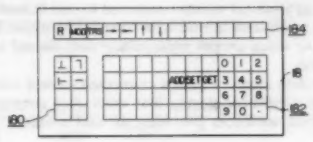
Shoichi Masui, Kawasaki; Mikihiko Oonari, Kokubunji; Kunio Yamanaka, Mito, and Masaoki Takaki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

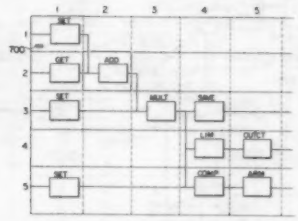
Filed May 29, 1981, Ser. No. 268,369

Claims priority, application Japan, May 30, 1980, 55-71390

Int. Cl.[3] **G06F** *3/00, 3/14, 9/06, 15/06*

U.S. Cl. 364—900 **6 Claims**





1. A programming equipment comprising:

a display unit including means for displaying in each of a plurality of partial display areas on a display screen the symbol of a subprogram comprising a block diagram image and the name of a subprogram predetermined for each of a plurality of arithmetic and logical operations with a data flow indicating symbol between block diagram symbols to indicate the path of data flow between subprograms;

memory means having a plurality of unit memory areas, one for each of said plurality of partial display areas of said display unit, for storing data relating to selected subprograms and having an address memory area for storing address information to designate one of said plurality of unit memory areas;

an input including means for inputting names of subprograms, data flow specifications for specifying symbols indicating the data flows between said subprograms, instructions for modifying said address information stored in the address memory area of said memory means and instructions for reading out data from said plurality of unit memory areas of said memory means to an external program utilization unit; and

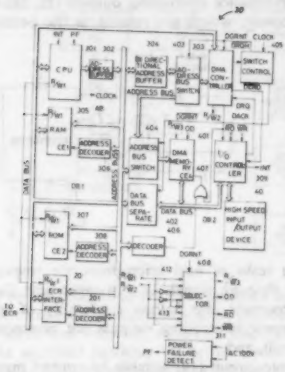
processor means connected to said display unit, said input device and said memory means for storing the names of subprograms and said data flow specifications received from said input device into the unit memory areas of said memory means designated by said address information stored in said address memory area of said memory means and for controlling said display unit to display the symbols and names of said subprograms and the data flows specified by said data flow specifications as stored in said memory means in the partial display areas on the screen of said display unit designated by said address information, including means for reading out the names of said subprograms and said data flow specifications from said plurality of unit memory areas in a predetermined sequence to said external program utilization unit.

4,455,620

DIRECT MEMORY ACCESS CONTROL APPARATUS

Masakatu Watanabe, Kyoto; Yukinori Hamada, and Ryuichi Chiwaki, both of Nagaokakyo, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Nov. 24, 1981, Ser. No. 324,607
Claims priority, application Japan, Nov. 29, 1980, 55-168679
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—900 6 Claims



1. A direct memory access control apparatus, comprising:

input/output means for inputting and outputting data, and for generating a direct memory access request signal;

storage means for storing said data;

central processing means for processing said data;

direct memory access control means responsive to said direct memory access request signal for performing direct data transfer between said storage means and said input-/output control means;

a data bus;

data bus control means having a first state in which said direct memory access control means is interconnected through said data bus to said storage means, and having a second state wherein said direct memory access control means is coupled to both said central processing means and said storage means through said data bus;

an address bus having portions connected to said central processing unit, said direct memory access control means, and said memory means;

first address bus switching means having a first state wherein said address bus portion connected to said central processing means is disconnected from said address bus portion connected to said direct memory access control means whereby said direct memory access control means bus portion is available for connection to said memory means, and a second state wherein said central processing means address bus portion is connected to said direct memory access control means data bus portion;

second address bus switching means having a first state wherein said memory means address bus portion is interconnected to said direct memory access control means address bus portion made available in said first state of said first address bus switching means and wherein said memory means address bus portion is disconnected from said central processing means address bus portion, and a second state wherein said memory means address bus portion is connected to said central processing means address bus portion; and

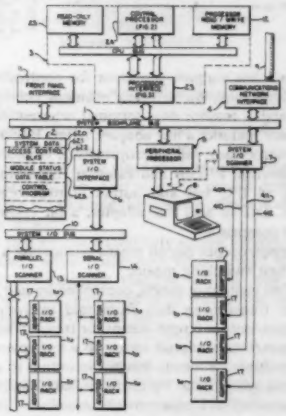
switch control means responsive to said direct memory access request signal from said input/output means for causing said data bus separating means to assume its first state, and for causing said first and second address bus switching means to assume their first states.

4,455,621

PROGRAMMABLE CONTROLLER WITH MULTIPLE FUNCTIONS

Michael S. Pelley, Willoughby Hills; David R. Rohn, Richmond Heights; Lawrence A. Komarek, Euclid, and Raymond A. Grudowski, South Euclid, all of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 241,723, Mar. 9, 1981, abandoned. This application Dec. 7, 1981, Ser. No. 328,428
Int. Cl.³ G06F *5/00, 15/46*
U.S. Cl. 364—900 10 Claims



1. A programmable controller which comprises:

a data table for storing data of different types in respective data table sections;

memory means for storing a control program which includes arithmetic instructions that operate on data in different data table sections; and

a processor for sequentially reading the control program instructions from the memory and operating upon data stored in the data table, the processor including;

(a) means responsive to a source operand address associated with an arithmetic instruction read from the memory means, for reading data from an indicated data table section and converting it to a native data type;

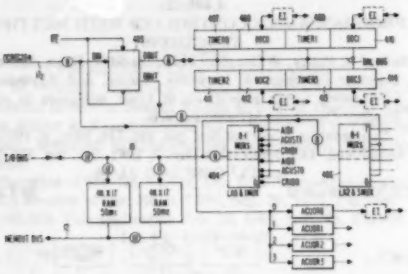
(b) means responsive to the last named means and to an operation code associated with an arithmetic instruction read from the memory means, for performing the indicated arithmetic function on source data which has been converted to the native data type; and

(c) means responsive to the last named means, and to a destination operand address associated with an arithmetic instruction read from the memory means, for converting the data which results from the arithmetic operation from the native data type to the data type of the data table section indicated by the destination operand address and for writing the converted data to the indicated data table section.

4,455,622
BIT-ORIENTED LINE ADAPTER SYSTEM

Richard A. Loskorn; Philip D. Biehl, both of Dana Point, and Robert D. Catiller, Garden Grove, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 5, 1982, Ser. No. 355,134
Int. Cl.³ G06F 3/00
U.S. Cl. 364—900 13 Claims



1. In a line support processor for controlling data transfer operations using bit oriented protocol between a host computer and a remote data terminal wherein said line support processor includes a line adapter, a data link interface unit and a microprocessor, said microprocessor including program data in an internal PROM and external RAM storage means and having an I/O bus and output control registers providing control data to said line adapter, a bit oriented line adapter system comprising:

(a) input/output circuit means connecting a data terminal to a first switching means;

(b) first switching means, controlled by said microprocessor, for transferring data from said microprocessor to said input/output circuit means, or transferring data from said input/output circuit means to a multiplexor means;

(c) multiplexor means, having an output to said I/O bus, for conveying data bytes from said input/output circuit means to said microprocessor;

(d) memory means, connected to said I/O bus, for buffering data being transferred between said microprocessor and said data terminal.

4,455,623
APPARATUS FOR DECREASING CURRENT CONSUMPTION OF MICROPROCESSORS IN BATTERY-ENERGIZED SYSTEMS

Jurgen Wesemeyer, Nuremberg; Lothar Haas, Stein, and Georg Haubner, Berg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

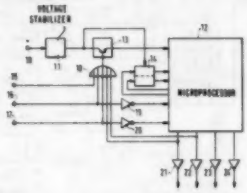
Continuation of Ser. No. 124,476, Feb. 25, 1980, abandoned.
This application Jun. 1, 1982, Ser. No. 383,956
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1979, 2911998
Int. Cl.³ G06F 1/00
U.S. Cl. 364—900 4 Claims

1. A system for economically operating a microprocessor for performing at least one task of a first class requiring a minimum decoding time and a plurality of tasks of a second class permitting a decoding time substantially greater than said minimum decoding time, comprising:

electrical power supply means (10, 11) for supplying power to said microprocessor (12);

electrically controllable switch means (13) having a path controlled thereby which is interposed between said power supply means (10, 11) and said microprocessor (12);

an OR circuit (18) having its output connected for controlling said switch means (13) to connect said power supply means (10, 11) to said microprocessor (12) during the presence of a signal at any one of several inputs of said OR circuit (18), said inputs including a first input (15) for receiving signals designating requests for performance of a task of said first class, a plurality of second inputs (19, 20) for receiving signals designating requests for performance of a task of said second class, said second inputs but not said first input being connected to an input port of said microprocessor (12) for task designation decoding and monitoring by said microprocessor, and a plurality of third inputs connected respectively to a plurality of first task performance controlling outputs (21, 22) of said microprocessor, which are related to the performance of



ongoing tasks of said microprocessor respectively requested through signals at said input port thereof, said microprocessor also having a plurality of second task performance controlling outputs not connected to said OR circuit, and

a plural-state circuit (14) settable by control inputs thereof for indicating which of a plurality of tasks of said first class is being initiated when an input appears at said first input (15) of said OR circuit,

whereby said tasks of said first class are performable only when said tasks of said second class are not being performed and are then performable quickly with the shortest possible duration of on-time of said switch means (13).

4,455,624
LOGIC STATE ANALYZER WITH FORMAT SPECIFICATION

George A. Haag, Colorado Springs; O. Douglas Fogg, Loveland; Gordon A. Greenley; Steve A. Shepard, both of Colorado Springs, all of Colo., and F. Duncan Terry, Meridan, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 210,462, Nov. 25, 1980, Pat. No. 4,373,193, which is a continuation of Ser. No. 75,787, Sep. 17, 1979, abandoned, which is a division of Ser. No. 828,138, Aug. 29, 1977. This application Jan. 13, 1983, Ser. No. 457,599
Int. Cl.³ G06F 3/14, 7/00
U.S. Cl. 364—900 5 Claims

1. Apparatus configurable by a user for selecting, storing and displaying a set of states occurring in a collection of digital signals, the apparatus comprising:

input means having a plurality of inputs coupled to receive the collection of digital signals for performing signal conditioning thereon according to preselected thresholds to produce a collection of conditioned signals;

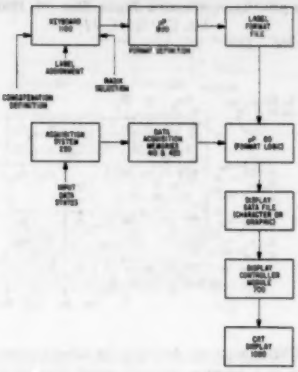
format specification means for specifying a user selected partition of the plurality of inputs into groups, including means for specifying individual user selected labels each respectively associated with each group, and including means for specifying individual user selected radices each respectively associated with each group;

trace specification means for specifying a set of trace specification state conditions according to which the set of states to be stored and displayed is selected from among the totality of states occurring in the collection of digital signals;

recognition means coupled to the collection of conditioned signals and responsive to the trace specification means for

producing control signals indicative of whether or not a state is to be stored;

storage means coupled to the collection of conditioned signals and to the control signals for storing the set of state data selected by the trace specification means; and



display means coupled to the storage means and responsive to the format specification means for displaying the specified labels and including means for displaying according to the specified partition the set of stored state data as groups of integers, each group of integers displayed in its associated radix and each displayed in correlated relation to its associated label.

4,455,625

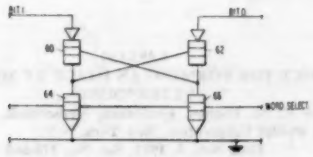
RANDOM ACCESS MEMORY CELL

Bernard A. Denis, Mennecy, France, and David B. Eardley, Stanfordville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 237,796, Feb. 24, 1981, Pat. No. 4,387,445. This application Jan. 17, 1983, Ser. No. 458,592

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—154 **6 Claims**



1. A memory device comprising:

first and second bit lines;

first and second PNP transistors each having an emitter, base and collector, the emitters of said first and second PNP transistors being coupled to said first and second bit lines, respectively;

first and second NPN load transistors each having an emitter, base and collector, the collector of said first and second NPN transistors being coupled to the collectors of said first and second PNP transistors, respectively, and to the bases of said second and first PNP transistors, respectively, the base and emitter of said first NPN transistor being coupled to the base and emitter, respectively, of said second NPN transistor;

means for forward biasing the emitter-base junctions of said first and second NPN transistors to thereby generate a potential difference between said first and second bit lines in accordance with the data stored in said memory device; and

means for sensing the potential difference between said first and second bit lines to determine the data stored in said memory device.

4,455,626

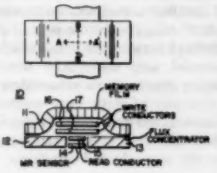
THIN FILM MEMORY WITH MAGNETORESISTIVE READ-OUT

Olin S. Lutes, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 21, 1983, Ser. No. 477,056

Int. Cl.³ G11C *11/15*

U.S. Cl. 365—158 **19 Claims**



1. A planar thin-film magnetic memory structure on a substrate comprising:

a magnetoresistive film sensor formed in a relatively long and narrow thin-film on the substrate;

a magnetic circuit including magnetic film means comprising at least a memory film, said magnetic circuit defining an elongated gap at and along the position of said magnetoresistive film sensor;

said memory film having a relatively square hysteresis loop;

first and second "write" conductor films formed of highly conductive non-magnetic material, at least one of said "write" conductor films positioned within said magnetic circuit along said elongated gap.

4,455,627

STATIC TYPE SEMICONDUCTOR MEMORY DEVICE

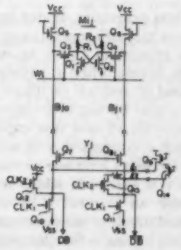
Atsushi Oritani, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 5, 1982, Ser. No. 346,199

Claims priority, application Japan, Feb. 6, 1981, 56-16488

Int. Cl.³ G11C *13/00*

U.S. Cl. 365—226 **11 Claims**



1. A static type semiconductor memory device including a chip having selected and non-selected conditions comprising:

bit lines;

column selecting transistors respectively connected to said bit lines;

data buses respectively connected to said column selecting transistors;

a plurality of static type memory cells, each of which is

connected to a respective pair of said bit lines, said respective pair of said bit lines connected to a respective pair of said column selecting transistors, said respective pair of said column selecting transistors connected to a respective pair of said data buses;

first transistors connected to said respective pair of data buses, said first transistors turned on for a first period of time when the chip of said semiconductor memory device is changed from the selected condition to the non-selected condition, said first transistors pulling down the potentials of said respective pair of data buses toward a relatively low first potential; and

second transistors connected to said respective pair of data buses, and second transistors turned on for a second period of time when the chip of said semiconductor memory device is changed from the non-selected condition to the selected condition, said second transistors pulling up the potentials of said respective pair of data buses toward a relatively high second potential which is greater than said first potential, said static type semiconductor memory device being operated in a power down mode in which all of said plurality of static type memory cells are electrically disconnected from said respective pairs of said bit lines when said chip of said semiconductor memory device is in the non-selected condition.

4,455,628

SUBSTRATE BIAS GENERATING CIRCUIT

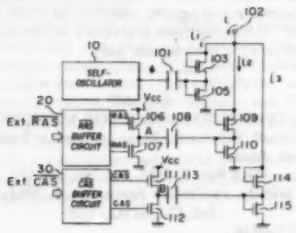
Hideyuki Ozaki; Kazuyasu Fujishima, and Kazuhiro Shimotori, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1982, Ser. No. 439,215

Claims priority, application Japan, Dec. 17, 1981, 56-204658

Int. Cl.³ G11C *7/00*

U.S. Cl. 365—226 **4 Claims**



1. A substrate bias generating device included in a dynamic type random access memory, comprising:

a self-oscillator generating a periodic output;

a first capacitor having a first electrode connected with an output terminal of said self-oscillator;

a first rectifier circuit having a first terminal connected with a second electrode of said first capacitor and a second terminal which is connected with said output terminal;

a charge pump circuit of $\overline{RAS}$ line including a second capacitor having a first electrode which receives a signal synchronized with an external $\overline{RAS}$ signal supplied from outside to said random access memory, and a second rectifier circuit having a first terminal connected with a second electrode of said second capacitor and a second terminal which is connected with said output terminal; and

a charge pump circuit of $\overline{CAS}$ line including a third capacitor having a first electrode which receives a signal synchronized with an external $\overline{CAS}$ signal supplied from outside to said random access memory, and a third rectifier circuit having a first terminal connected with a second electrode of said third capacitor and a third terminal which is connected with said output terminal.

4,455,629

COMPLEMENTARY METAL-INSULATED SEMICONDUCTOR MEMORY DECODER

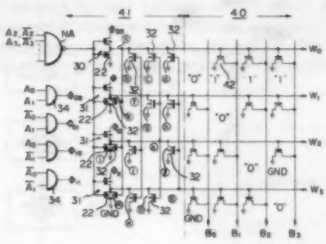
Yasuo Suzuki, Yokohama, and Masanori Nagasawa, Kamakura, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 23, 1981, Ser. No. 333,641

Claims priority, application Japan, Dec. 24, 1980, 55-183074

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—230 **16 Claims**



1. A CMIS memory decoder for selecting each set of 2^m (where m is a positive integer) word lines operatively connected to a memory array operatively connected to bit lines, said decoder having connected thereto an input gate having an output and receiving address signals having a first m bit portion and a second bit portion, the second bit portion being used for simultaneously specifying the 2^m word lines and the first bit portion for generating clock pulses, said decoder comprising:

CMIS inverters, operatively connected to the output of the input gate, and each inverter being driven by the corresponding clock pulse generated in dependence upon the first m bit portion of said address signal, an output of each of the inverters being operatively connected to the corresponding one of the 2^m word lines; and

$2^m - 1$ pull-down transistors for each of the 2^m word lines and operatively connected to the respective word line and each having a gate operatively connected to one of the remaining $2^m - 1$ word lines.

4,455,630

DEVICE FOR FORMING AN IMAGE BY MEANS OF ULTRASOUND

Antonie R. M. Loonen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 5, 1981, Ser. No. 318,645

Claims priority, application Netherlands, Dec. 11, 1980, 8006718

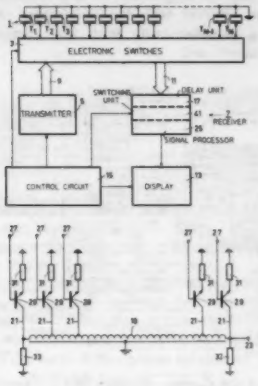
Int. Cl.³ G01S *15/06, 7/54*

U.S. Cl. 367—103 **3 Claims**

1. In a device for forming an image of an object by use of ultrasound energy, of the type which comprises an array of electroacoustic transducers; a tapped delay line having a plurality of taps, which serve as inputs for signals originating from the various transducers, and an output; first switching means which selectively connect one or more of the transducers to each of a plurality of the taps to effect focusing and/or steering of an ultrasound beam which is received by the transducers; and signal processing and display means, connected to the output of the delay line, which produce and display an image of an object which reflects ultrasound echoes to the transducers; the improvement which comprises;

a plurality of current source circuits, each current source circuit having an output connected to an associated tap of

the delay line and an input connected to the first switching means for receipt of the signals from the transducers,



whereby the load presented to the delay line by the transducers is effectively reduced.

4,455,631

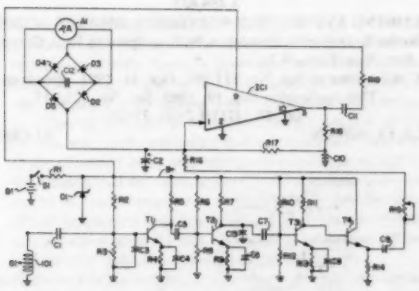
SEISMIC PARAMETER MEASUREMENT METHOD AND APPARATUS

Ronald D. San Giovanni, Burlington, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 20, 1981, Ser. No. 284,429

Int. Cl.³ G01V *1//16*

U.S. Cl. 367—136 **7 Claims**



1. Seismic parameter measurement apparatus, comprising; an electrodynamic geophone comprising a coil and a sharpened portion adapted to be driven into the ground in an area to be tested for the seismic parameters thereof, said coil being connected to an electronic circuitry case by means of an electric cable, said case including a microammeter, an on-off switch and a gain control knob mounted on the top surface thereof, said cable connecting within said case to the input of a solid state bandpass preamplifier comprising three cascaded transistor amplifiers adapted to preamplify seismic signals generated in said coil of sad geophone, said preamplifier comprising a high pass filter, the output of said preamplifier being connected to an emitter-follower circuit adapted to function as a buffer, the output of said emitter follower being applied to an integrated circuit amplifier through a low-pass filter, said integrated circuit amplifier comprising a negative feedback circuit, a diode rectifier bridge circuit connected to the output of said integrated circuit amplifier, said microammeter and a capacitor being connected across the output of said bridge, the ground return circuit of said diode bridge being arranged to provide operating bias voltage for said integrated circuit amplifier, and a battery within said case arranged to provide B+ operating voltage for said preamplifier and integrated circuit amplifier.

4,455,632

APPARATUS FOR OPTICALLY READING A RECORD CARRIER WITH TWO TYPES OF INFORMATION AREAS

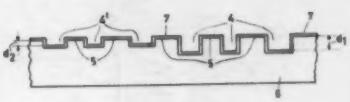
Josephus J. M. Braat, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

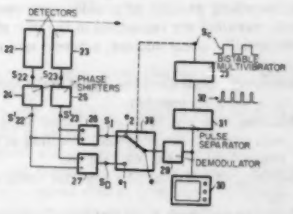
Continuation of Ser. No. 179,334, Aug. 18, 1980, abandoned, which is a continuation-in-part of Ser. No. 419,640, Sep. 17, 1982, which is a continuation of Ser. No. 214,538, Dec. 8, 1980, abandoned, which is a continuation of Ser. No. 925,433, Jul. 17, 1978, abandoned. This application Oct. 28, 1981, Ser. No. 315,692

Claims priority, application Netherlands, Apr. 25, 1980, 8002411

Int. Cl.³ G11B *7/00*

U.S. Cl. 369—45 **16 Claims**



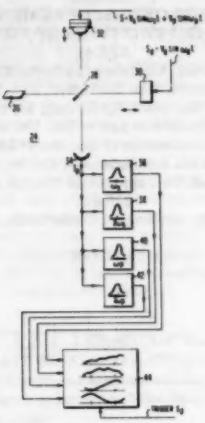


1. An apparatus for reading information from a record carrier containing information areas of a first type having a first phase depth and information areas of a second type having a second phase depth which is different from said first phase depth, the information areas being arranged in a plurality of generally parallel tracks and being spaced from each other in the track direction, said apparatus comprising means for producing a read beam of radiation, means for focussing said read beam to a read spot on said record carrier, means for producing relative movement between said record carrier and said beam so that said read spot scans a given track and the radiation is modulated in accordance with information stored thereby due to variations in the phase of the radiation produced by the information areas, at least two radiation sensitive detectors each having an output for supplying an electrical output signal corresponding to radiation incident thereon, said detectors being disposed in the path of the modulated radiation coming from the record carrier, with a respective one of said detectors being disposed on each side of a line which is effectively transverse to the direction of the tracks, means for combining said output signals of said detectors so as to produce a further signal representative of the information being read, and means for coupling said output of each detector to said combining means, said coupling means including means for introducing a predetermined, constant phase shift into at least one of said output signals.

4,455,633
METHOD FOR EVALUATING DISTORTIONS IN VIDEO DISC RECORDINGS

Istvan Gorog, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 21, 1982, Ser. No. 370,581
Int. Cl.³ G11B *3/44, 9/06, 27/00*; H04N *5/76*
U.S. Cl. 369—53 **10 Claims**



1. A method for measuring non-linear distortions produced in a recording process of a video disc system, wherein the signals recorded are recovered in the disc playback system in a substantially linear manner, wherein said method comprises the steps of:

providing a high level test signal and a low level pilot signal to a working member;

detecting said low level pilot signal using a non-linear system, said non-linear system effecting at least one spurious component of said pilot signal;

detecting said at least one spurious component of said pilot signal;

detecting said high level test signal and said non-linear distortions produced in said recording process;

analyzing said detected low level pilot signal and said at least one spurious component of said pilot signal to determine an operating region for said non-linear system wherein said non-linear system has a substantially linear characteristic; and

measuring said high level test signal and said non-linear distortions produced in said recording process in the operating region wherein said non-linear system has a substantially linear characteristic and, from said measuring step, determining the non-linear characteristics of said recording process from the ratio of the amplitude of the non-linear distortions to the amplitude of the high level test signal.

4,455,634
AUDIO/VIDEO QUALITY MONITORING SYSTEM

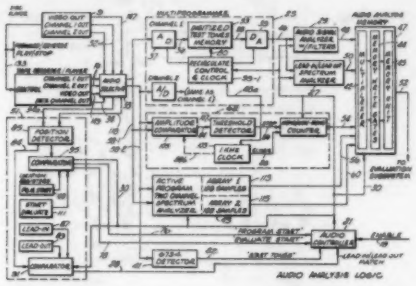
Edward Efron, Irvine; James O. McPherson, Newport Beach, and Young B. Kim, Long Beach, all of Calif., assignors to Discovision Associates, Costa Mesa, Calif.

Division of Ser. No. 339,011, Jan. 12, 1982. This application Sep. 30, 1982, Ser. No. 429,347
Int. Cl.³ G11B *27/36, 23/18*
U.S. Cl. 369—58 **6 Claims**

1. A method of establishing the characteristics of a program of recorded information previously recorded on two channels of a recording medium, comprising the steps of:

(a) sampling the audio waveform amplitude of audio information contained on each channel of the recorded program;

(b) comparing the amplitudes of said information sampled from one channel with the amplitudes of information occurring simultaneously with that sampled from the other channel; and

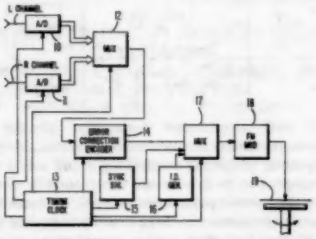


(c) counting the number of times that the amplitudes of the samples from the two channels are within a prescribed percentage tolerance of one another to provide information regarding whether or not the signals on the two channels are substantially similar in informational content.

4,455,635
CODING SYSTEM FOR RECORDED DIGITAL AUDIO

Charles B. Dieterich, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 311,259, Oct. 14, 1981, abandoned. This application Sep. 19, 1983, Ser. No. 533,047
Int. Cl.³ G11B *7/00, 27/00*
U.S. Cl. 369—59 **12 Claims**



1. A system for recording analog signals in a digital manifestation thereof comprising:

means responsive to said digital manifestation of said analog signal for generating error correction code signals and multiplexing said error correction signals with said digital manifestation, the error correction signals being time delayed a predetermined interval relative to the digital manifestation of signal to which they correspond;

means for generating auxiliary digital signals for identifying blocks of error encoded digital manifestation of signal; and

means for substituting said auxiliary digital signals for like periods of error encoded digital manifestation of signal.

4,455,636

RECORD CLEANING DEVICE

Tatsuhiko Tsutsui, Funabashi; Toru Sema, Yokohama, and Tsuneo Unezawa, Narashino, all of Japan, assignors to Lion Corporation, Tokyo, Japan

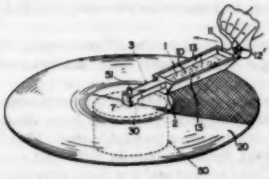
Division of Ser. No. 206,108, Nov. 12, 1980, Pat. No. 4,378,597. This application Sep. 30, 1982, Ser. No. 431,445

Claims priority, application Japan, Dec. 17, 1979, 54-175113; Dec. 17, 1979, 54-175114; Dec. 17, 1979, 54-175115

The portion of the term of this patent subsequent to Mar. 29, 2000, has been disclaimed.

Int. Cl.[3] G11B *3/58*

U.S. Cl. 369—72 3 Claims



1. A record cleaning device, comprising:

a container body adpated to be located above a record to be cleaned, said body having a generally longitudinal dimension extending normal to recording groves on the record, said container body having a cavity for receiving therein an adhesive material to be applied onto a surface of the record, said cavity extending in the longitudinal direction of the container body and having cross sections normal to the longitudinal direction thereof which increase from one end to be located near the center of the record to the other end to be located near the outer periphery of the record, said adhesive material being adapted to be peeled off the surface as a film after the material dries;

a slit formed in the bottom of said container body to longitudinally extend along substantially the entire length of the cavity;

an arm member attached to said one end of the container body to be integrally formed therewith;

positioning means provided at an end of said arm member, said positioning means being adapted to be located at the center of the record to be cleaned so that the container body can be rotated over the record; and

support means situated at at least one of the bottom face of the container body which does not locate over the surface of the record to be cleaned and the bottom face of the arm member, a clearance being formed between the bottom face of the contaner body including the bottom of the slit and the upper surface of the record to be cleaned when the cleaning device is located over the record, so that the adhesive material can be applied uniformly onto the upper surface of the record through said slit and said clearance when the container body is turned over the record.

4,455,637

DISC RECORD PLAYER WITH AUTOMATIC LOADING/UNLOADING ASSEMBLY

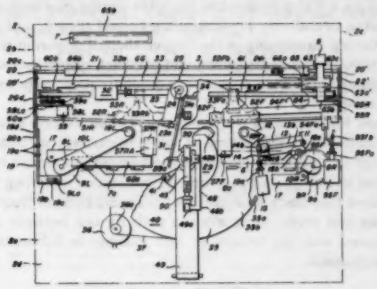
Hiroyuki Suzuki; Masayuki Taoka, and Kiyoshi Watanabe, all of Higashihiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 24, 1981, Ser. No. 286,467

Claims priority, application Japan, Jul. 30, 1980, 56-2818; Jul. 30, 1980, 56-2819; Jul. 30, 1980, 56-2820; Jul. 30, 1980, 56-2821; Jul. 30, 1980, 56-2822; Jul. 30, 1980, 56-2823; Jul. 30, 1980, 56-2824; Jul. 30, 1980, 56-2825; Jul. 30, 1980, 55-109634[U]; Jul. 30, 1980, 55-109635[U]; Jul. 30, 1980, 55-109636[U]; Jul. 30, 1980, 55-109637[U]; Jul. 30, 1980, 55-109638[U]; Jul. 30, 1980, 55-109639[U]; Jul. 30, 1980, 55-109640[U]; Jul. 30, 1980, 55-109641[U]

Int. Cl.[3] G11B *25/04, 1/00, 3/60, 17/02*

U.S. Cl. 369—77.1 15 Claims



1. A record player for selectively playing either side of a record disc comprising:

a player body being vertically disposed and including a record inlet slot in an upper surface thereof;

at least one support arm being initially positioned in close proximity to said record inlet slot for directly receiving and supporting a record disc in a vertical disposition;

a turntable operatively positioned for rotation within said player body and including a turntable shaft being horizontally positioned and axially movable for receiving a record disc;

drive means operatively connected to said turntable for imparting rotation thereto;

record movement drive means being operatively connected to said turntable and to said support arm for selectively lowering said support arm to position a record disc adjacent to said turntable shaft and for selectively raising said support arm for removal of said record disc from said player body;

a turntable disc operatively mounted on said turntable;

turntable reciprocating drive means being initially in an inoperative position wherein said turntable disc and said turntable shaft are in a first position when a record disc is not positioned adjacent to said turntable shaft and being activated for imparting an axial movement to said turntable disc and said turntable shaft to a second position when a record disc is lowered by said at least one support arm to position a record disc adjacent to said turntable shaft; and

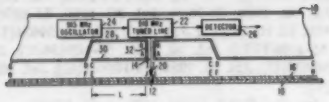
pickup arm means being operatively positioned adjacent to a first and second playing surface of said record for selectively playing either side thereof;

said record movement drive means and said turntable reciprocating drive means being both selectively energized by said turntable which is operatively rotated by said drive means.

4,455,638
RF RADIAL CHOKE FOR USE IN RECORD PLAYBACK APPARATUS

Robert M. Wilson, Hamilton Square, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 2, 1982, Ser. No. 364,690
Int. Cl.³ H04N 5/80; G11B 9/06
U.S. Cl. 369—126 12 Claims



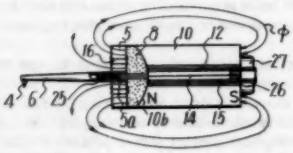
1. In a record playback system of the type having a substantially enclosed conductive arm carriage for supporting and translating a stylus/stylus arm assembly during playback, said arm being operatively positioned above said record, said carriage having an opening in the bottom thereof to permit selective stylus/record engagement, said playback system including an oscillator providing a signal at a given frequency, the apparatus comprising:

means for providing a symmetrical choke formed in conjunction with the bottom of said arm carriage such that a high impedance is formed at a given radial distance from said stylus opening in a band of frequencies including said given frequency whereby energy in said band of frequencies and propagating along a path formed between said record and the bottom of said carriage is substantially attenuated.

4,455,639
MOVING COIL TYPE PICKUP CARTRIDGE

Naohisa Aoki, and Akira Matui, both of Mitaka, Japan, assignors to Nippon Columbia Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 240,227, Mar. 3, 1981, abandoned. This application Aug. 22, 1983, Ser. No. 524,699
Int. Cl.³ H04R 9/16
U.S. Cl. 369—147 10 Claims



1. A moving-coil type pickup cartridge comprising:

a vibrating system including a cantilever having a stylus fixed thereto at its one end and coil-wound armature fixed thereto at its other end;

a suspension holder for holding a suspension wire, said suspension wire being fixed at one end thereof to said cantilever and at the other end thereof to said suspension holder;

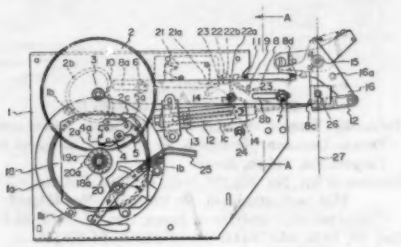
an elongated hollow cylindrical magnet magnetized in its lengthwise direction said magnet having its interior free of any other magnet material to maintain a flux path originating at one open end of said magnet and passing about the exterior of said magnet to the other open end, thereof said vibrating system being disposed at said one open end of said magnet and having said armature disposed within said flux path, and

a damper interposed between said armature and said one open end of said magnet.

4,455,640
RECORD PLAYING DEVICE

Hiroshi Koyahata, Yokohama, Japan, assignor to Katoh Electrical Machinery Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 201,382, Jul. 15, 1980, abandoned. This application Sep. 27, 1982, Ser. No. 424,912
Int. Cl.³ G11B 17/06
U.S. Cl. 369—216 1 Claim



1. In a record player having a turn-table (19) for supporting a record disc, a tone-arm (27) horizontally and vertically movable, mounted on a tone-arm shaft (15), and, an operation plate (16) fixed to said tone-arm shaft; a tone-arm returning mechanism for returning the tone-arm to an arm rest after completion of record playing, said tone-arm returning mechanism comprising, in combination:

(a) a base plate (1) designed to be affixed onto a cabinet, said plate having a large diameter bore (1a) and an elongated bore (1c);

(b) a direct driving motor (18) for said turn-table, fixed to said base plate and received in said large diameter bore (1a), said motor having a turn-table shaft (18a) fitted to a low boss (19a), formed unitarily with said turn-table, a pinion (20) fitted around said low boss, overlapping in the horizontal direction;

(c) a wheel gear (2) pivotally mounted on the upper face of said base plate for intermittent engagement with said pinion (20), said wheel gear having a heart-shaped cam groove (2b) and link pawls (4, 5) pivotally mounted thereon;

(d) a returning plate (8) reciprocally mounted on said base plate, said returning plate having a bent portion at one end portion thereof, an engaging pin at another end portion thereof, and an operation lug (8d) for pushing said operation plate in one direction after completion of record playing, said engaging pin being engaged with said cam groove;

(e) an elevation rod vertically slidable mounted between said tone-arm and said bent portion;

(f) a sliding lever (12) reciprocally mounted on a holder (13) fixed to said base plate, one end portion of said sliding lever being pivotally connected with said operation plate, said sliding lever having a crank-shaped side elevation receiving said elongated bore so that said sliding lever cooperates with said tone-arm and actuates said link pawls (4, 5) to initiate the mutual engagement between said pinion and said wheel gear;

(g) a microswitch (21) affixed to said base plate for controlling the operation of said turn-table drive motor, switch controlling members for controlling said microswitch including a microswitch control drive member (22) pivoted to said base plate and a switch control driven member (23) pivoted to said drive member and said control driven member being operated by a pressing pin (9) projecting from said sliding lever, so that said microswitch is turned "OFF" when said returning plate and said sliding lever occupy a predetermined position before record playing and turned "ON" when one of said returning plate and said sliding lever is moved; and,

(h) a holding pin (28), tightly pivoted to said returning plate,

holding pin having an eccentric barrel portion (28*b*) received by the elongated bore (1*c*), so that as an engagement point between said engaging pin and said cam groove is slightly changed by rotating said holding pin, a stopping position of said wheel gear is slightly adjusted.

4,455,641

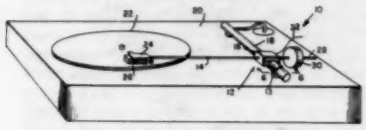
LINEAR TRACKING SYSTEM

Alan P. Sliski, Lexington, Mass., assignor to Dennesen Electrostatics, Inc., Beverly, Mass.

Continuation-in-part of Ser. No. 941,470, Sep. 12, 1978, abandoned. This application Dec. 26, 1979, Ser. No. 107,063

Int. Cl.[3] **G11B** *3/10*

U.S. Cl. 369—249 **17 Claims**



1. In a linear tone arm tracking system for a record player where the stylus tone arm moves on a guideway across a recording, the improvement comprising a carriage for said guideway, which carriage includes a partial sleeve connected to said tone arm at a point removed from the stylus thereof; said sleeve fitting partially over said guideway, said partial sleeve having a substantially centrol portion and beveled end portions extending from said central portion to the ends of said sleeve so that said sleeve diminishes in surface area from said centrol portion outwardly towards said ends and means to cause said sleeve to hover over said guideway in substantially symmetrical proximity therewith so that when said stylus rides in a groove of a recording and is laterally shifted thereby, said tone arm and partial sleeve readily shift over said guideway in response to the shift of said stylus.

4,455,642

CASE FOR ACCOMMODATING A ROTARY RECORDING MEDIUM

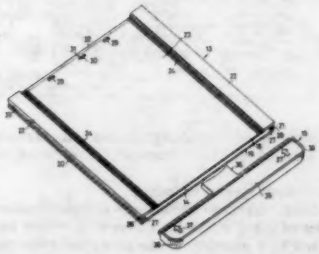
Shosei Inaba, Sagamihara, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Oct. 9, 1981, Ser. No. 310,130

Claims priority, application Japan, Oct. 9, 1980, 55-144616[U]

Int. Cl.[3] **G03B** *7/00;* **B65D** *85/30*

U.S. Cl. 369—291 **17 Claims**



1. A case for accommodating a rotary recording medium comprising:

a jacket having an opening at one end, for receiving and accommodating a rotary recording medium within an internal space provided within said jacket; and

a detachable lid member for closing the opening of the jacket accommodating said rotary recording medium,

said jacket having a two-piece construction consisting solely of a flat and hollow jacket main body having openings at first and rear ends thereof and unitarily having upper and lower sheet parts and right and left side walls, and a rear lid fixed to and closing the rear end opening of said jacket main body, said rear lid having a receiving part for receiving said rotary recording medium,

said jacket main body being obtained by cutting a flat and hollow tube-shaped member formed by a modified extrusion into a predetermined length.

4,455,643

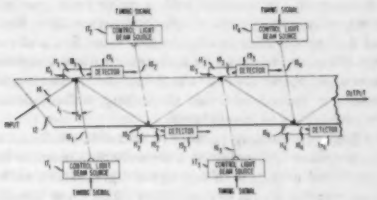
HIGH SPEED OPTICAL SWITCH AND TIME DIVISION OPTICAL DEMULTIPLEXER USING A CONTROL BEAM AT A LINEAR/NONLINEAR INTERFACE

Peter W. Smith, Colts Neck, and Walter J. Tomlinson, III, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 2, 1982, Ser. No. 364,996

Int. Cl.[3] **G02B** *27/10;* **H04B** *9/00*

U.S. Cl. 370—4 **10 Claims**



7. A high speed optical demultiplexer for separating time division multiplexed signals including a plurality of separate data signals transmitted in a plurality of separate sequential time slot intervals of a frame period, the demultiplexer comprising:

a length of a transparent linear dielectric medium including an outer surface and a predetermined index of refraction which is capable of propagating a beam of light including a plurality of separate data signals therein;

a plurality of layers of a transparent nonlinear dielectric medium which exhibit an optical Kerr effect, each of said layers being formed on a separate portion of the outer surface of the length of a linear medium to provide a separate nonlinear interface at the boundary of said linear and nonlinear media, each nonlinear interface being capable of totally reflecting a data light beam propagating in the linear medium at less than a critical angle of incidence and a light intensity on each nonlinear interface which is below a predetermined threshold level; and

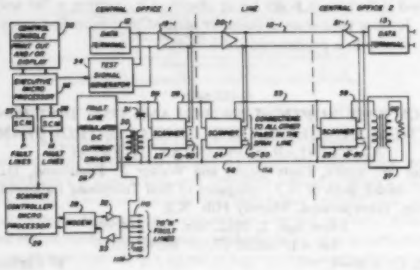
a plurality of selectively energizable light sources for producing separate control light beams which are each directed through the linear medium and at a separate one of the plurality of nonlinear interfaces, each control light beam being selectively energized during a time when a separate desired one of the plurality of data signals in the time division multiplexed signal is incident on the nonlinear interface associated with said control light beam, which control light beams each are disposed at a sufficient angle of incidence, width and light intensity at the associated nonlinear interface for causing a portion of the data light beam signal including a desired one of the data signals which is incident on the associated nonlinear interface, concurrent with the control light beam, to be transformed into a self-focused beam propagating in the associated layer of a nonlinear medium.

4,455,644

TELECOMMUNICATION FAULT DETECTING SYSTEM

James R. Fox, Newtown, Pa.; Michael J. Horwitz, Cherry Hill, N.J., and Jay R. Charles, Doylestown, Pa., assignors to Telesciences, Inc., Moorestown, N.J.

Filed Dec. 16, 1981, Ser. No. 331,206
Int. Cl.³ H04B 3/46
U.S. Cl. 370—13 27 Claims



1. For use in conjunction with a pulse code modulation telecommunications system which comprises at least first and second data terminals located at spaced apart first and second central offices and having a data communications transmission line extending therebetween which includes in-line signal regenerators at spaced intervals therealong, a fault detecting system comprising in combination,

(a) a fault line running parallel to said data communication transmission line including a separate data monitor means associated with each of said signal regenerators, each said data monitor means having a data signal input circuit and a bi-directional signal circuit, said data signal input circuit of said data monitor means being couplable to the data communication line at the output of the signal regenerator with which it is associated to thereby receive live traffic digital data signals from said data communication transmission line which have just been regenerated, and said bi-directional circuit being coupled to said fault line to receive instruction signals therefrom and to transmit digital data signals thereto, and

(b) data monitor means control means couplable to said fault line and when so coupled being operative to transmit instruction signals selectively to each of said data monitor means coupled to said fault line and being operative to receive and process digital data signals transmitted to said fault line by said data monitor means.

4,455,645

BACK-UP CONTROL SYSTEM IMPLEMENTED WITH A REDUNDANCY SCHEME FOR PROTECTION AGAINST FAILURE

Yoshiaki Mijioka, Fujisawa; Kouichi Yamamoto, Kodaira; Taihei Suzuki, and Takuji Mukaemachi, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 24, 1981, Ser. No. 286,517
Claims priority, application Japan, Jul. 25, 1980, 55/101153
Int. Cl.³ H04Q 11/04; H04J 3/14
U.S. Cl. 370—16 10 Claims

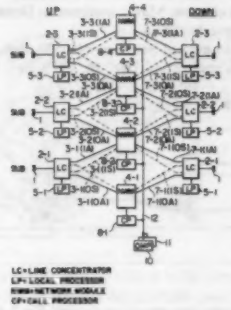
3. A back-up control system comprising:

(a) n load supply means which are capable of supplying the same maximum loads, respectively, n being an integer not smaller than 2;

(b) n + 1 load accommodating means each of which having a capacity to accept the maximum load supplied from each of said load supply means;

(c) n line groups the i-th one of which is connected to the i-th one of said load supply means, each of said line groups including an active line and a standby line, the active line in the i-th line group being connected to the i-th load accommodating means, the standby line in the i-th line group being connected to the (i+1)th load accommodating means adjacent to the i-th load accommodating means; and

(d) control means for controlling said line groups, during a normal operation, so that the i-th load supply means and



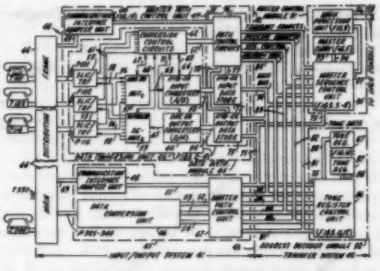
the i-th load accommodating means are connected through the active line in the i-th line group, and for effecting a change-over operation for the active and standby lines, upon occurrence of failure in a given j-th one of said n+1 load accommodating means, so that in each of the j-th line group, the (j+1)th line group, - - - and the n-th line group the active line in that line group is changed over to the standby line in that line group.

4,455,646

PULSE CODE MODULATED DIGITAL AUTOMATIC EXCHANGE

William T. Bloodworth, Naperville, Ill., assignor to Richard L. Scully, Barrington Hills, Ill., a part interest

Filed Aug. 26, 1982, Ser. No. 412,013
Int. Cl.³ H04J 3/02; H03K 17/00
U.S. Cl. 370—66 40 Claims



1. A pulse code modulated digital automatic exchange for a telephone network or like communication network, comprising:

an input/output system including:

line connection means defining N communication ports;

a series of input multiplex conversion means each connected to a plurality of the communication ports and each generating a multiplexed sequence of M-bit parallel digital data signals, each digital data signal being representative of an input signal received at one communication port;

a corresponding series of output de-multiplex conversion means, each connected to the plurality of communication ports served by one input conversion means, for

converting M-bit parallel digital data signals to output signals and selectively applying those output signals to those communication ports;

conversion control means, connected to the input conversion means and the output conversion means, for actuating each input conversion means and its associated output conversion means at a multiplex conversion rate determined by the nature of the input and output signals, in accordance with a multiplex scan cycle of given duration;

data storage means, connected to the input conversion means and the output conversion means, including at least N M-bit storage locations, at least one storage location associated with each communication port; and

path control means, connected to the conversion control means and the data storage means, for correlating any and all possible combinations of two communication ports for data transfer calls and actuating the data storage means to effect a first series of transfers of parallel M-bit digital data signals from a storage location for one port in a call to a storage location for the other port in that call and a second series of transfers of parallel digital data signals from a storage location for the other port to a storage location for the one port in that call;

and a data transfer system including:

an M-bit parallel digital data bus, connected to the data storage means, for transferring digital data signals recorded at one location in the data storage means to another location in the data storage means;

and sequence control means, connected to the path control means, for actuating the path control means in accordance with a transfer cycle of sequential transfer time slots, one time slot assigned to each communication port, with one of the series of data transfers occurring in the time slots assigned to the calling port in a call and the other series of data transfers occurring in the time slots assigned to the called port in that call;

the duration of the complete transfer cycle, encompassing all N ports, being no greater than the duration of the multiplex scan cycle.

4,455,647

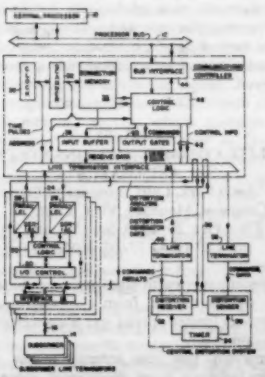
APPARATUS FOR ESTABLISHING MULTI-ADDRESS CONNECTIONS

Enrique Gueldner, Coral Springs, Fla., assignor to Siemens Corporation, Iselin, N.J.

Filed Jun. 14, 1982, Ser. No. 388,087

Int. Cl.³ H04J 3/12

U.S. Cl. 370—62 **4 Claims**



1. In a digital data telecommunications system comprising a central switching system and a plurality of line terminators each connecting the switching system to a pair of incoming and outgoing lines and each designed to convert serial data transmitted with various speeds and codes along the incoming and outgoing lines into formatted message characters received and emitted by the switching system, and vice-versa, wherein said switching system includes a connection control memory having storage cells each associated with a respective one of the line terminators, said cells storing control data and specifying the allocation between a calling line terminator and the respective called line terminator for the duration of the call, and said control data enabling the switching system to interconnect sequentially each calling line terminator with the respective called line terminator in a time multiplex mode for transmitting one message character at a time, the improvement constituting an arrangement for establishing multi-address connections, in combination with said central switching system, and comprising:

(1) an additional line terminator connected to receive a character of a multi-address message from a calling line terminator across the switching system, and having a serial output furnishing corresponding serial data;

(2) a distributing data base connecting said serial output of said additional line terminator in parallel to all line terminators entitled to receive a multi-address message; and

(3) said line terminators entitled to receive multi-address messages including control means for alternatively enabling the respective line terminator in a single address mode to receive a message character supplied by the switching system and to convert the same into serial data for emitting the data to the respective outgoing line, and in a multi-address mode to receive serial data transmitted along said distributing data bus, respectively, for transfer to said outgoing line, wherein each line terminator includes a line interface unit having a pair of external inputs and outputs connected to the associated incoming and outgoing line, respectively, and having a corresponding pair of internal inputs and outputs, wherein said line terminator further includes means for converting serial data received on the incoming line to formatted data characters, and vice-versa, said converting means having a pair of internal inputs and outputs connected to the respective ones of said internal inputs and outputs of said line interface unit, and having external parallel inputs and outputs connected to said central switching system for receiving and transmitting, respectively, a message character,

wherein said line terminator further includes means for controlling the operation of the line terminator and having control data inputs and outputs connected to receive and to transmit, respectively, control signals from and to the central switching system, and

wherein each of said line terminators entitled to receive a multi-address message further comprises:

switch means arranged between the line interface unit and the converting means for alternatively connecting the internal input of the line interface unit to the internal output of the converting means and to said distributing data bus, respectively, under control of said control means.

4,455,648

TIME DIVISION MULTIPLEX SWITCHING NETWORK UNIT

Reiner Binz, Hohenschaeftlarn; Eberhard Knorpp, Gauting, and Frithjof von Sichart, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 4, 1982, Ser. No. 345,595

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1981, 3109808

Int. Cl.³ H04J 3/00

U.S. Cl. 370—66 **5 Claims**

1. A time division multiplex switching network unit for the connection of a plurality of pulse code modulation lines which effects an assignment of time channels used for incoming pulse

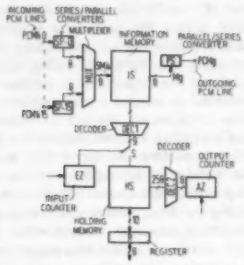
code modulation lines to time channels used for outgoing pulse code modulation lines by the cyclic input into storage of incoming pulse code modulated words and a corresponding delayed reading of the outgoing pulse code modulated words by random access, comprising: a plurality of identical switching network modules each comprising

a plurality of inputs each of which corresponds to a like input of each other module for connection to a respective incoming pulse code modulation line,

an information memory having a smaller storage capacity than corresponds to the total number of pulse code modulation word time intervals formed during each pulse frame on the incoming pulse code modulation lines,

series/parallel conversion means connected to said inputs,

multiplexing means connected between said series/parallel conversion means and said information memory,



an output for connection to an outgoing pulse code modulation line,

parallel/series conversion means connected between said information memory and said output, and

drive means connected to said information memory for operating said information memory to cyclically receive incoming pulse code modulation words from said multiplexing means and to output pulse code modulation words by random access with a time delay to said parallel/series conversion means, the time delay being relative to the cyclic input and within one time channel slot so that said switching network unit operates as a spatial switching unit,

the number of said switching network modules being the quotient of the number of inputs and outputs of a single switching module.

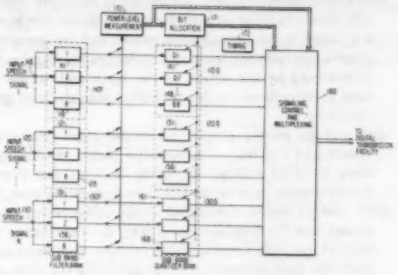
4,455,649

METHOD AND APPARATUS FOR EFFICIENT STATISTICAL MULTIPLEXING OF VOICE AND DATA SIGNALS

Daniel J. Esteban; Gardner D. Jones, Jr., and Lee S. Rogers, all of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 15, 1982, Ser. No. 339,592
Int. Cl.³ H04J *6/02*
U.S. Cl. 370—80 **13 Claims**

1. A statistical multiplexer including a plurality of input ports wherein each of said input ports has a split band encoder and each of said split band encoders is provided with a plurality of encoder elements, means for allocating to each encoder element of each of said split band encoders a bit allocation determined by comparing a signal in said element with signals



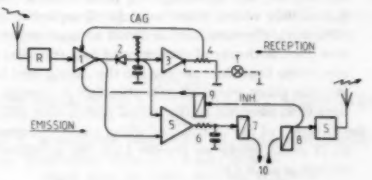
in all of the elements of all split band encoders coupled to said input ports.

4,455,650

SYSTEM OF BEACONS FOR THE TRANSMISSION OF INFORMATION

André J. C. Gendrot, 78 Ornano, 75018 Paris, France

Filed Oct. 20, 1980, Ser. No. 199,055
Claims priority, application France, Oct. 24, 1979, 79 26351
Int. Cl.³ H04L *5/16*
U.S. Cl. 370—97 **9 Claims**



1. In a transmission system comprising a series of identical beacons, each comprising an emitter and a receiver tuned to the same frequency, the emitter being switched on as soon as a bit of information is received from another beacon, and means for cutting off the receiver as soon as the emitter is switched on, all the beacons thus being able to receive the same information simultaneously and each beacon being able to retransmit the information received from another to all the beacons not having received information, characterized in that transmission is effected bit by bit, and the beacons each comprise: means for creating its own information and/or for processing information received, in turn; and counting means arranged to recognize the beginning of a space-time allocated to said each beacon to create its own information and/or process the information received.

4,455,651

SATELLITE COMMUNICATIONS SYSTEM AND APPARATUS

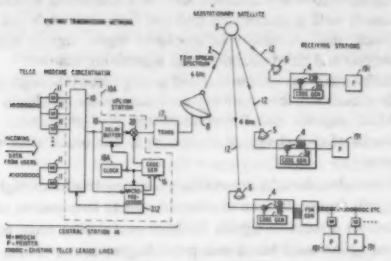
Paul Baran, Menlo Park, Calif., assignor to Equatorial Communications Company, Mountain View, Calif.

Filed Oct. 20, 1980, Ser. No. 198,296
Int. Cl.³ H04J *13/00;* **H04B** *15/00*
U.S. Cl. 370—104 **21 Claims**

10. In a geostationary earth satellite communications system, wherein the signals relayed from a repeating geostationary satellite are power limited spread spectrum signals, a receiving earth station comprising

wide beamwidth, low gain antenna means, said antenna means including a fixed directional antenna having a beamwidth wider than the standard orbital spacing of geostationary satellites, whereby said antenna receives signals from more than one geostationary satellite, and

detection means coupled to said antenna means, said detection means including spread sprectrum processing means,



for recovering data sent to said receiving earth station via said repeating geostationary satellite.

4,455,652

APPLIANCE COMPRISING A DIGITAL PROGRAMMING DEVICE WHICH IS PROTECTED AGAINST MALFUNCTIONING DUE TO UNCONTROLLED SWITCH-ON PHENOMENA

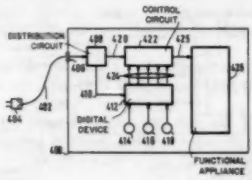
Andries van der Meulen, Beetsterzwaag, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 19, 1981, Ser. No. 275,464

Claims priority, application Netherlands, Jun. 20, 1980, 8003567

Int. Cl.³ G06F *11/00*

U.S. Cl. 371—16 **5 Claims**



1. A stand-alone appliance for general consumer use, comprising:

(a) a connection (402) which comprises a detachable contact member (404) for connecting an electrical power supply source to a distribution member (408) for deriving a first and a second supply current from [the mains] said power supply source;

(b) a control circuit (422) which comprises a first input (420) for receiving the first supply current, a second input (424) for receiving a specific control signal, and a first output (425) for a controlled activation signal;

(c) a functional member (426) which comprises a second input for receiving said activation signal;

(d) a digital programming device (412) which comprises a non-volatile memory section which contains a control program for said functional member in first memory locations, and which also comprises a volatile (X0-X3) memory section for variable data, a third input (410) for receiving the second supply current, directly from said distribution member, a fourth input for a specification signal to said functional member, and a second output for said specific control signal;

(e) externally activatable means for forming said specification signal (414,416,418); characterized in that said digital programming device comprises:

(f) first means for implementing an operative routine (434) for generating said specific control signal, each persistent loop thereof comprising a subroutine (436) which tests a dummy multibit code which is stored in a predetermined location of said volatile memory section;

(g) second means for implementing a preparation routine prior to beginning the operative routine, and which first unconditionally generates said multibit code (430) and subsequently a starting condition (432) for the operative routine, the beginning of the preparation routine being indicated by the programming device under the control of a negative result of said test.

4,455,653

APPARATUS COMPRISING A DIGITAL PROCESSOR AND FUNCTION TEST MEANS

Jacques Le Gars, Pacy/Eure; Martine Losset, and Michel Remery, both of Evreux, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

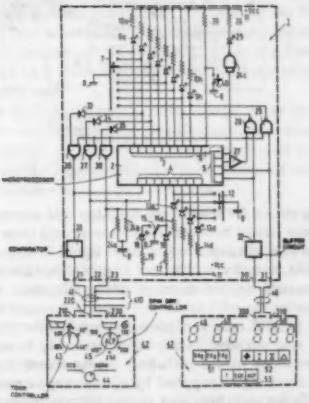
Filed Dec. 17, 1979, Ser. No. 104,208

Claims priority, application France, Dec. 18, 1978, 78 35599

Int. Cl.³ G06F *11/32*

U.S. Cl. 371—20 **8 Claims**

1. An apparatus comprising a programmed digital signal processor having test procedure means and input and output terminals connected to further parts of the apparatus, including input means and display means, gating means having a plurality of inputs and outputs, means for testing the input and output terminals of the signal processor and the connections to the further parts of the apparatus comprising means connecting assigned input and output terminals of the signal processor to the inputs of the gating means and the outputs of the gating means to other assigned input and output terminals of the



signal processor to provide a plurality of test paths, means connecting a further input of the gating means to a further terminal of the signal processor which provides a validation signal for the test procedure, means connecting a given output terminal of the signal processor to a test-result indicator, a test input terminal for supplying an actuation signal to activate the signal processor to generate a test-step sequence and provide signals through the relevant test paths, and wherein the signal processor receives the resultant signals at said other assigned terminals to provide a signal to the test-result indicator via said given output terminal.

4,455,654

TEST APPARATUS FOR ELECTRONIC ASSEMBLIES EMPLOYING A MICROPROCESSOR

Kasi S. Bhaskar, Edmonds; Alden J. Carlson, Bothell, both of Wash.; Alastair N. Couper, Honolulu, Hi.; Dennis L. Lambert, Bothell, and Marshall H. Scott, Woodinville, both of Wash., assignors to John Fluke Mfg. Co., Inc., Everett, Wash.

Filed Jun. 5, 1981, Ser. No. 270,926

Int. Cl.³ G06F *11/22*

U.S. Cl. 371—20 **56 Claims**

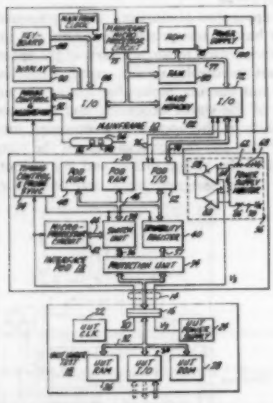
1. A test system for functionally testing a microprocessor-based assembly of the type wherein a microprocessor circuit

communicates with at least one of a random access memory unit, a read-only memory unit and an input/output register via an interconnection bus, and a clock circuit coupling a periodic clock signal to said microprocessor circuit to establish a bus cycle of a predetermined length, said test system comprising:

a second microprocessor circuit substantially identical to said microprocessor circuit of said microprocessor-based assembly being tested;

interconnection means for connecting said test system to said microprocessor-based assembly being tested with said test system being connected to replace said microprocessor circuit of said assembly being tested, said interconnection means including means for coupling said clock signal to said second microprocessor circuit;

memory means, including means for storing instructions and data for programming said second microprocessor circuit, for supplying addressing and data signals;



switching means for selectively coupling said second microprocessor circuit between a first operational state wherein said second microprocessor is in signal communication with said memory means and a second operational state wherein said second microprocessor circuit is in signal communication with said interconnection means to supply signals to and receive signals from said interconnection bus of said microprocessor-based assembly being tested, said switching means including timing means responsive to said clock signal supplied by said microprocessor-based assembly for switching said second microprocessor circuit into said second operational state at a predetermined time, said second microprocessor circuit being maintained in said second operational state for a single bus cycle each time said switching means switches said second microprocessor from said first operational state to said second operational state.

4,455,655

REAL TIME FAULT TOLERANT ERROR CORRECTION MECHANISM

Peter M. Galen, and Kent D. Wilken, both of Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 28, 1981, Ser. No. 306,634

Int. Cl.³ G06F *11/10*

U.S. Cl. 371—38 **2 Claims**

1. An error-correcting code device for transmitting and correcting digital signals between a processing unit and a memory storage device comprising:

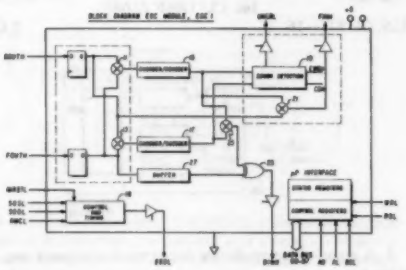
control means coupled with said memory storage device for providing first and second sets of control signals associated with successions of blocks of digital signals emanating from said memory storage device;

gating means having a plurality of channels and responsive to said first set of control signals for receiving a succession of blocks of digital signals from said memory storage device, for transmitting said succession of blocks of digital signals into a first channel, and for transmitting synchronously with transmissions into said first channel, block by block, said succession of blocks of digital signals into a second and third channel in an alternating manner;

a buffer memory, coupled to said gating means through said first channel, for receiving said succession of blocks of digital signals and for transmitting said succession of blocks of digital signals so received, one block after another;

first encoder/decoder means for receiving blocks of digital signals from said second channel, and in response to said first set of control signals for both performing error processing on each block and providing alternate blocks of output signals in synchronism in corresponding blocks of digital signals transmitted from said buffer memory, each alternate block of output signals containing an error correcting pattern;

second encoder/decoder means, electrically identical to said first encoder/decoder means, for receiving blocks of digital signals from said third channel, and in response to said first set of control signals for both performing error processing on each block and providing alternate blocks of output signals in synchronism with corresponding blocks of digital signals transmitted from said buffer memory,



each alternate block of output signals containing an error correcting pattern;

correction means, coupled to said first and second encoder/decoder means and to said buffer memory, responsive to said first set of control signals, for receiving: said alternate blocks of output signals from said first encoder/decoder means, said alternate blocks of output signals from said second encoder/decoder means, and said succession of blocks of digital signals from said buffer memory;

said gating means also being responsive to said second set of control signals for receiving a succession of blocks of digital signals from said processing unit and for transmitting said succession of blocks of digital signals simultaneously into said second channel, into said third channel, and into a fourth channel;

said first encoder/decoder means, in response to said second set of control signals, developing a first error syndrome and providing a first set of output characters representing said first error syndrome for each block of digital signals received through said second channel;

said second encoder/decoder means, in response to said second set of control signals, developing a second error syndrome and for providing a second set of output charac-

ters representing said second error syndrome for each block of digital signals received through said third channels;

said error detection means, being responsive to said second set of control signals for receiving blocks of digital signals from said second, third and fourth channels, combining said blocks of digital signals from said fourth channel and said output blocks of digital signals from said first encoder/decoder means, providing a succession of encoded blocks of digital signals corresponding to said blocks of digital signals emanating from said processing unit, comparing said first and second sets of output characters developed for each block of digital signals received on said second and third channels, and providing an error flag when said first and second sets of output characters are not identical;

said correction means correcting each block in said succession of blocks of digital signals received from said buffer memory according to said error correcting pattern in each corresponding block of output signals from said first encoder/decoder means and from said second encoder/decode means.

4,455,656

COMBUSTION CONTROL CIRCUIT

Toshio Tanaka, Toride; Sumio Nakagawa, Matudo, and Kenzi Toudo, Yanai, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

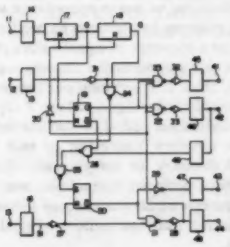
PCT No. PCT/JP80/00033, 371 Date Nov. 4, 1980, 102(e) Date Nov. 4, 1980, PCT Pub. No. WO80/01946, PCT Pub. Date Sep. 18, 1980

PCT Filed Feb. 28, 1980, Ser. No. 212,730

Claims priority, application Japan, Mar. 7, 1979, 54-25521

Int. Cl.³ F23N *5/24*; G05B *9/02*

U.S. Cl. 371—57 3 Claims



1. In a combustion control circuit including semiconductor integrated circuits responsive to a supply voltage from a power supply and having a logic gate section for performing a sequence control by generation of logic signals in response to a start signal, an input interface section for applying said start signal to said logic gate section in response to an input control signal required for combustion control, and an output interface section for converting the logic signals produced from the logic gate section into output control signals including a combustion control signal; the improvement wherein said input interface section includes means responsive to said input control signal for generating said start signal which is enabled at a higher predetermined voltage level of said supply voltage than is said logic gate section, so that upon initial application of said supply voltage from said power supply said logic gate section is enabled prior to said start signal generating means.

4,455,657

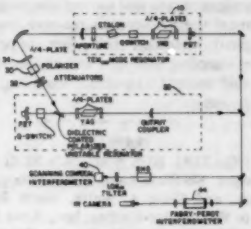
STABLE SINGLE AXIAL MODE Q SWITCHED LASER OSCILLATOR WITH INJECTION LOCKING

Robert L. Byer, Stanford, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Continuation of Ser. No. 199,690, Oct. 23, 1980, abandoned. This application May 12, 1983, Ser. No. 493,954

Int. Cl.³ H01S *3/098*

U.S. Cl. 372—18 2 Claims



1. A stable high gain solid state laser comprising

a Q-switched multiple axial mode high gain oscillator comprising neodymium in a host crystal of yttrium aluminum garnet,

an optical oscillator for generating an optical wave and including band pass means for limiting the frequency of said optical wave to a single axial mode, said optical oscillator generating a stable optical wave at a first frequency, said first frequency being within the band of said multiple modes, and

means for injecting said stable optical wave into said high gain oscillator whereby an axial mode nearest to said frequency selects a single axial mode and through gain saturation suppresses other axial modes of said high gain oscillator.

4,455,658

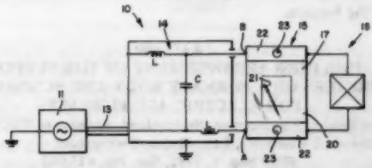
COUPLING CIRCUIT FOR USE WITH A TRANSVERSELY EXCITED GAS LASER

Leroy V. Sutter, Jr., 6301 Summertime La., Culver City, Calif. 90230

Filed Apr. 20, 1982, Ser. No. 370,103

Int. Cl.³ H01S *3/09*

U.S. Cl. 372—38 4 Claims



1. A gas laser having an improved coupling circuit for use in combination with said gas laser which includes:

a. an elongated chamber of cross-sectional dimensions suitable for confining a laser gas discharge, at least a portion of said elongated chamber being formed from a dielectric material;

b. a laser gas disposed in said elongated chamber;

c. first and second reflecting means for reflecting light energy from said laser gas discharge within said elongated chamber so that said light energy travels longitudinally the length of said elongated chamber;

d. first and second electrode means for transversely exciting said laser gas, each of said electrode means being formed from an electrically conductive material and being disposed opposing each other; and

e. energy means for applying a voltage of alternating polarity between said first and second electrode means at a

frequency ranging from 10 Mhz to about 3 GHz to establish a laser gas discharge in said laser gas with said improved coupling circuit coupling said first and second electrodes means to said energy means, said improved coupling circuit comprising:

(i) first impedance-matching means for matching the steady state reactive impedance of said elongated chamber to the impedance of said energy means; and

(ii) second impedance-matching means coupling said first electrode means to said second electrode means in order to cancel the pre-ignition reactive impedance of said elongated chamber, said first impedance-matching means coupling said first and second electrode means and said second impedance-matching means to said energy means.

4,455,659

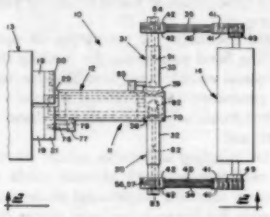
COAXIAL BUS AND BUS SYSTEM

James J. Kasper, Sheffield Lake, Ohio; George E. Bosch, Detroit, Mich., and Craig A. Smith, North Ridgeville, Ohio, assignors to Watteredge-Uniflex, Inc., Avon Lake, Ohio

Filed Mar. 4, 1982, Ser. No. 354,907

Int. Cl.³ C03B *5/027*

U.S. Cl. 373—39 **26 Claims**



1. A bus system for connecting between two electrode connections of a furnace and respective output terminals of a transformer, said system comprising a bus stem having first and second tubular concentric conductors, first connection means for connecting a first end portion of each of said conductors with a respective one of the output terminals of the transformer, a pair of branch conductors each connected with an opposite end portion of a respective one of said tubular conductors, and second connection means for connecting each of the branch conductors with a respective electrode connection on the furnace.

4,455,660

INCLINED ARRANGEMENT OF THE SUPPORT SURFACES OF A FURNACE BODY AND FURNACE LID FOR ELECTRIC ARC FURNACES

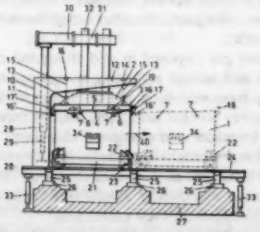
Karl Bühler, Nussbaumen, Switzerland, assignor to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Filed Sep. 1, 1982, Ser. No. 413,963

Claims priority, application Switzerland, Sep. 2, 1981, 5642/81

Int. Cl.³ F27D *3/00*

U.S. Cl. 373—71 **15 Claims**



1. An apparatus for movement of a furnace lid of an electric arc furnace relative to a body of said furnace, comprising:

at least one lid carrying means operatively associated with said furnace lid; and

means for moving the furnace body and the furnace lid relative to one another by approximately one furnace body width, the separating surfaces of the furnace body and the furnace lid being inclined to a horizontal plane by the same angle and direction of movement upon movement of the furnace body in a first direction of the angle opening and, when the furnace lid is moved, in a second direction opposite said first direction.

4,455,661

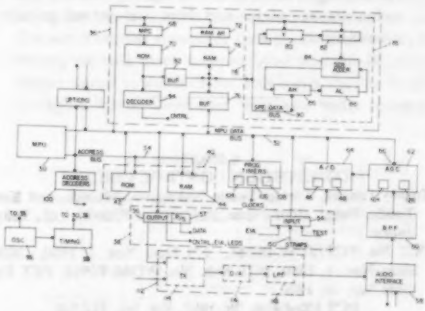
DUAL PROCESSOR DIGITAL MODEM APPARATUS

Shahid U. H. Qureshi, Natick, Mass., assignor to Codex Corporation, Mansfield, Mass.

Continuation of Ser. No. 136,920, Apr. 3, 1980, abandoned. This application Jun. 13, 1983, Ser. No. 503,577

Int. Cl.³ H04B *1/38*

U.S. Cl. 375—8 **13 Claims**



1. Modem apparatus in which a modulated carrier signal represents digital bits, wherein said apparatus comprises

first digital processing circuitry comprising

first programmable digital circuitry for arithmetic manipulation of digital values in accordance with selectable arithmetic program instructions to produce a correspondence between a sequence of signal values at a rate of 1/T signal values per second and a sequence of samples at a rate higher than 1/T samples per second representing said modulated carrier signal, where T represents the duration of a modulation period of said carrier signal,

first bus circuitry connected to said first programmable digital circuitry for carrying said digital values and said arithmetic program instructions, and

first memory circuitry connected to said first bus circuitry for storing said instructions, digital values, and signal values,

second digital processing circuitry comprising

second programmable digital circuitry for generating control signals corresponding to predetermined sequences of said arithmetic instructions,

second bus circuitry connected to said second programmable circuitry for carrying said control signals, and

second memory circuitry connected to said second bus circuitry for storing control signal program instructions,

timing circuitry for timing the operation of said first and second processing circuitries, and

means for providing a sequence of time-limited handshakes between said first and second processing circuitries, during which said control signals are transferred to said first processing circuitry to cause said first programmable digital circuitry to carry out said predetermined sequences of said arithmetic instructions,

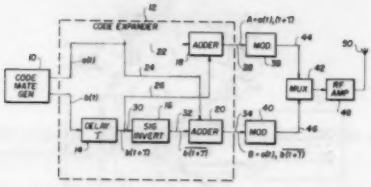
said second digital processing circuitry including means re-

sponsive to the level of said modulated carrier signal, as received, for selecting a particular one of said control signals for transfer to said first digital processing circuitry during a subsequent said handshake.

4,455,662
NOISE CODE GENERATOR AND PULSE COMPRESSION COMMUNICATIONS SYSTEM

Frank S. Gutleber, 24 Carriage House La., Little Silver, N.J. 07739

Filed May 25, 1983, Ser. No. 497,956
Int. Cl.³ H04J 13/00; H03K 13/24
U.S. Cl. 375—25 24 Claims



1. A method of generating a second pair of multi-bit digital codes from a first pair of multi-bit digital codes comprising the steps of:

generating first and second multi-bit digital codes;

generating the complement of said second code;

overlapping said first and second codes by a predetermined time interval which is a function of the code length of said first and second codes;

combining said first and second codes following said overlapping step to form a first expanded code;

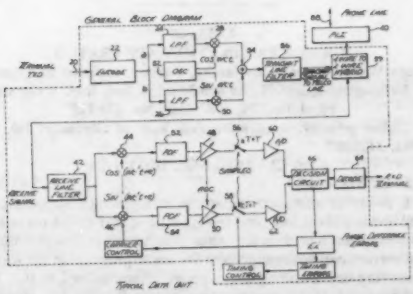
overlapping said first code and said complement of said second code by the same said predetermined time interval; and

combining said first code and said complement of said second code following said overlapping step to form a second expanded code.

4,455,663
FULL DUPLEX MODEMS AND SYNCHRONIZING METHODS AND APPARATUS THEREFOR

Robert G. Ragsdale, Hollywood, Fla., assignor to Novation, Inc., Chatsworth, Calif.

Filed Nov. 19, 1981, Ser. No. 322,927
Int. Cl.³ H04B 1/10
U.S. Cl. 375—98 28 Claims



1. A receiver for quadrature amplitude modulated signals comprising

a line filter means for coupling to a phone line, said line filter means being for means to providing an output responsive to signals on the phone line within the frequency range of a quadrature amplitude modulated signal to be received on the phone line

first and second demodulation means coupled to said line filter means and operative on inphase and quadrature reference signals to provide first and second demodulator outputs in response thereto

first and second post demodulation filter means coupled to said first and second demodulator outputs respectively, for providing post demodulation filter outputs containing substantially reduced frequency components in the demodulator outputs above the frequency range of the desired detected signal

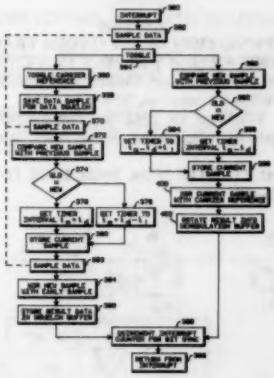
first and second automatic gain control means coupled to said first and second post demodulation filter means respectively for providing first and second AGC output signals of approximately predetermined amplitudes irrespective of variations in the amplitude of the outputs of said first and second post demodulation filters, and

output means coupled to said first and second automatic gain control means for sampling said first and second AGC output signals at a signaling rate and converting said sampled signals to digital signals.

4,455,664
CARRIER DATA OPERATED SQUELCH

Timothy M. Burke, Fort Worth, Tex., assignor to Motorola Inc., Schaumburg, Ill.

Filed Dec. 7, 1981, Ser. No. 328,360
Int. Cl.³ H03K 6/04
U.S. Cl. 375—104 10 Claims



1. A carrier data operated squelch circuit for use with a demodulator detector for phase shift keyed (PSK) encoded digital signals, which provides carrier clock pulses synchronized to the carrier, delayed carried clock pulses, and bit clock pulses synchronized to the edge of the bits of the digital signal, said carrier data operated squelch comprising:

limiting means, for hard limiting the PSK encoded digital signal;

early sampling means, coupled to the limiting means, for storing an early sample of the limited signal;

transition detection means, coupled to the limiting means and the early sampling means, for generating a transition signal if the current hard limited signal is different from the stored early sample;

counter means, coupled to the transition detection means, for accumulating a count by incrementing in response to detection of a transition signal and a bit clock pulse occurring concurrently with a delayed carrier clock pulse, and by decrementing in response to the absence of detection of a transition signal when a bit clock pulse occurs concurrently with a delayed carrier clock pulse; and

first comparator means, coupled to the counter means, for generating a squelch control signal in response to the count exceeding a predetermined threshold.

4,455,665

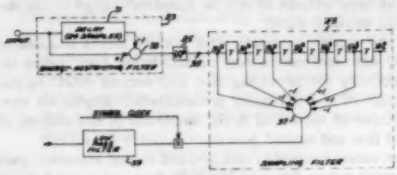
DATA MODEM CLOCK EXTRACTION CIRCUIT

Philip F. Kromer, III, Miami, Fla., assignor to Racal Data Communications Inc., Miami, Fla.

Filed Sep. 21, 1981, Ser. No. 304,044

Int. Cl.³ H04L *25/03, 7/06*

U.S. Cl. 375—110 13 Claims



1. In a data modem receiver having means for converting an analog signal into a digital input signal, having a symbol rate, clock extraction apparatus comprising:

a first filter means providing a periodic amplitude response and supplied with the digital input signal and providing successive outputs;

a squaring circuit means for squaring each output of said filter means to provide a squared output signal containing a spectral component at the symbol rate.

4,455,666

COMPENSATION OF 1ST ORDER TRANSFER INEFFICIENCY EFFECT IN A C.T.D.

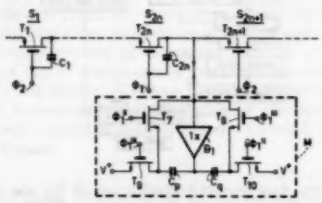
Arthur H. M. van Roermund, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 19, 1982, Ser. No. 369,789

Claims priority, application Netherlands, Apr. 29, 1981, 8102100

Int. Cl.³ G11C *11/34, 19/28;* H03K *17/16*

U.S. Cl. 377—58 14 Claims



1. A charge transfer device comprising a series of similar semiconductor cells ($S_1 \ldots S_{2n}$) each having an input, an output, a capacitance ($C_1 \ldots C_{2n}$) for the storage of charge which represents information and at least one charge-transfer control electrode, the input of each cell but the first being coupled to the output of the preceding cell, and control means for applying clock signals to the control electrodes of consecutive cells ($S_1 \ldots S_{2n}$) in accordance with a cyclic permutation in order to control the charge transfer in the charge transfer device, a residual portion of the stored charge remaining behind during said charge transfer and resulting in a "smearing" effect, characterized in that the device comprises a detector (M), which is coupled to the output of one of the cells (S_{2n}) for detecting the magnitude of a signal charge packet on said output and therefrom deriving an attenuated compensation charge packet, and that the device further comprises feedback path means for adding said attenuated compensation charge packet in a compensating sense to the charge packet which lags said charge packet by one clock period to compensate for said "smearing" effect.

4,455,667

RADIATION DIAGNOSTIC DEVICE FOR GENERATING TOMOGRAPHIC IMAGES

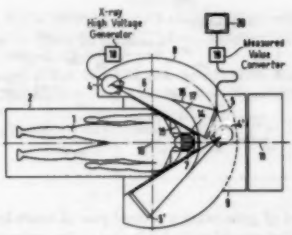
Günter Schwierz; Rudolf Schittenhelm; Günter Schmitt, all of Erlangen, and Edgar Tschunt, Rathsberg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 058,464, Jul. 18, 1979, Pat. No. 4,297,582. This application Feb. 20, 1981, Ser. No. 236,525

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1978, 2834934

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—4 5 Claims



1. A radiation diagnostic device for generating tomographic images of an exposure subject with a positioning table for supporting an exposure subject so as to lie generally parallel to a horizontally disposed longitudinal axis of the table, with a measuring arrangement for the irradiation of the exposure subject from various directions comprising a radiation source which emits a radiation beam penetrating the body layer to be examined, and a radiation receiver which supplies electric output signals corresponding to the measured radiation intensity, and with a measured value converter connected to the radiation receiver for calculating the attenuation values of specific iamge points of the irradiated body layer from the output signals of the radiation receiver, characterized in scanning means providing for rotation of the radiation beam about a rotational axis which extends transversely to the longitudinal axis of the positioning table, in such, manner that a layer area which is to correspond to the body layer to be examined is scanned by being penetrated exclusively by beams directed along beam paths each of which is crossed, along its entire length in the subject, by a multitude of other beam paths, said scanning means being further characterized in that the rotational axis (10) of the radiation beam (6) lies outside of the layer area covered by the radiation beam (6).

4,455,668

X-RAY EXAMINATION APPARATUS

Hans Warden, Upplands-Vaesby, Sweden, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 28, 1982, Ser. No. 393,110

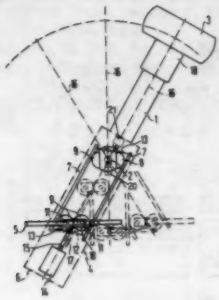
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1981, 3129307

Int. Cl.³ A61B *6/02;* G01T *1/29*

U.S. Cl. 378—021 7 Claims

1. X-ray examination apparatus, comprising a support pivotal about a pivot axis, and having on one side of the pivot axis an x-ray source, and on the other side, having an image recording carrier, and an arrangement for the adjustment of the image recording carrier along the support, characterized in that the arrangement (4) comprises two toothed racks (7) running parallel to the longitudinal direction of the support (1), two rigidly interconnected gear wheels, or gear wheel segments, (8) at the region of the pivot axis (2) and engaged with the racks (7) and adapated to be locked selectively relative to different parts of the apparatus, and in the region of the image recording carrier (5) two intermeshed gear wheels (9) for

coupling with the image recording carrier (5) at least indirectly, and means (14,15) for the displacement of the gear



wheels along the toothed racks to adjust the position of the image recording carrier (5).

4,455,669

X-RAY DIAGNOSTIC INSTALLATION COMPRISING MEANS FOR THE FORMATION OF A TRANSPARENCY SIGNAL

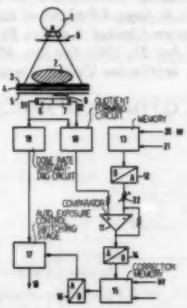
Horst Aichinger, Fuerth, and Heinz E. Kranberg, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 2, 1981, Ser. No. 230,638

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1980, 3008261

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—97 **1 Claim**



1. An x-ray diagnostic installation comprising an x-ray tube for producing radiation at a location for receiving a radiography subject (2), an x-ray tube power supply for supplying operating power to the x-ray tube, an x-ray image means (5) for disposition behind the location for receiving a radiography subject (2) for recording a radiation image, an exposure terminating switch for effecting a termination of an x-ray exposure operation of said x-ray tube, means for the formation of an electric signal which corresponds to the radiation transparency of the radiography subject, said means comprising two radiation detectors (6, 7) arranged in respective radiation paths behind the location for receiving a radiography subject (2) for supplying detector output signals, filter means (8) being present for providing a different radiation attenuation along the respective radiation paths of the respective detectors (6, 7), and a quotient forming circuit (10) connected with said radiation detectors (6, 7) for forming a quotient of said detector output signals as said electric signal, the detectors (6, 7) being disposed adjacent one another, and said filter means comprising a radiation filter (8) arranged in front of one of the detectors (7), an automatic exposure control circuit controlling said exposure terminating switch and comprising a switching stage (17) for actuation to effect termination of an x-ray exposure operation, said quotient forming circuit being disconnection dose value, in dependence upon the radiation transparency and thickness of the radiography subject,

a memory (13) for storing information associated with a mean radiation transparency and specific exposure values, a comparator (11) whose inputs are coupled with said memory and with the quotient forming circuit (10) for comparing the information of the memory (13) which information corresponds to the selected exposure values with the electric signal from said quotient forming circuit and a correction memory (15) connected with the output of the comparator (11) such that the correction memory (15) supplies a correction value to said switching stage in accordance with the difference signal supplied to the correction memory by said comparator as a function of the x-ray tube high voltage.

4,455,670

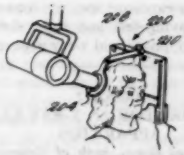
X-RAY CASSETTE HOLDER WITH BEAM-LIMITING DEVICE

William B. Farrar, Montgomery, Ala., and Don S. Norton, Clinton, Miss., assignors to Brell Mar Products, Inc., Jackson, Miss.

Filed Mar. 29, 1982, Ser. No. 363,118

Int. Cl.³ A61B *6/14*; G21K *1/02*

U.S. Cl. 378—147 **10 Claims**



1. An x-ray film cassette holder comprising:

an independent free-standing x-ray film cassette retaining structure for slidably receiving and holding an x-ray film cassette completely externally of a patient's body; and

an x-ray beam limiting means physically affixed solely to said free-standing retaining structure to be completely supported by the free-standing retaining structure but disposed at a predetermined distance therefrom sufficient to permit the placement of a complete integral portion of a patient's anatomy therebetween while remaining completely external to the patient's body;

said x-ray beam limiting means including an x-ray impervious planar structure having an x-ray exposure aperture formed therein for passing x-rays to said free-standing retaining structure on the opposite side of the patient's anatomy;

said x-ray beam limiting means also including

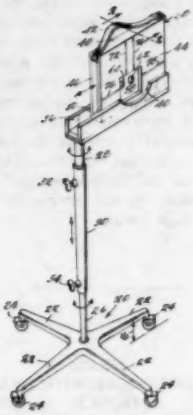
a structural support member having a first end adjustably affixed to said retaining structure and having a first aperture at a second end; and

an x-ray impervious member affixed to said second end of the support member and having a second aperture therein aligned with said first aperture.

4,455,671
X-RAY CASSETTE HOLDER

William B. Farrar, Montgomery, Ala., assignor to Brell Mar Products, Inc., Jackson, Miss.

Continuation-in-part of Ser. No. 329,138, Dec. 9, 1981, abandoned. This application Mar. 29, 1982, Ser. No. 363,372
Int. Cl.³ G03B 41/16
U.S. Cl. 378—170 50 Claims



1. An x-ray film cassette holder especially adapted for radiography of the temporomandibular joint, said holder comprising:

a hollow box-like structure having open ends for receiving said x-ray film cassette therethrough and having front and back walls;

said front wall being substantially impervious to x-rays except for an x-ray exposure aperture formed therein; and

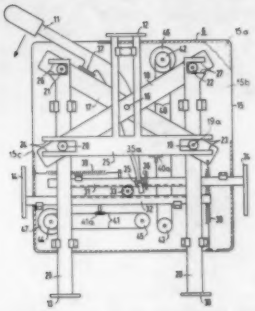
said back wall having left and right ear location holes formed therein opposite said x-ray exposure aperture.

4,455,672
CASSETTE HOLDER FOR AN X-RAY EXAMINATION APPARATUS

Alfred Hahn; Manfred Boegl, both of Erlangen, and Werner Rauch, Nuremberg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 7, 1982, Ser. No. 385,833
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1981, 3125015
Int. Cl.³ G03D 41/16
U.S. Cl. 378—181 8 Claims

1. A cassette holder assembly for an x-ray examination apparatus, comprising a housing, cassette holder means associated with the housing and having oppositely adjustable clamping jaw means for the centric clamping of x-ray film cassettes of varying format, and spring means for drawing the clamping jaw means toward one another, an actuating handle (11) displaceable on the housing (15) of the cassette holder means (6), an actuating frame (25) movably mounted by the housing and coupled with the handle (11) for movement in a given direction when manual force is applied to the handle (11) for the purpose of moving the clamping jaw means toward a release condition, said clamping jaw means comprising a first clamping jaw (12) connected with the actuating frame (25) for movement toward a release condition as the actuating frame is moved in the given direction, and lever means comprising a lever (17) pivotally mounted on the housing intermediate the ends of said lever and having a first end coupled with the actuating frame and having a second end for moving oppositely to the actuating frame, said clamping jaw means comprising a second clamping jaw (13) disposed opposite the first clamping jaw (12) and coupled with the second end of the lever (17) so as to move oppositely to the

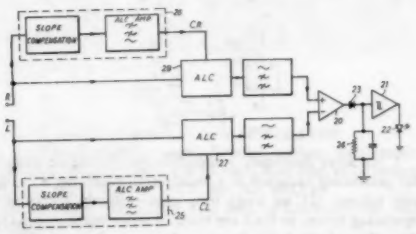


first clamping jaw as the actuating frame is moved in said given direction, said handle thereby being manually actuatable to move the first and second clamping jaws away from each other against the action of said spring means.

4,455,673
STEREO INDICATING CIRCUIT

Douglas R. P. Topping, Waltham Abbey; David W. Walton, Otley, and Leslie R. Sage, Ilford, all of England, assignors to Thorn Emi Ferguson Limited, London, England

Filed Jul. 23, 1982, Ser. No. 401,222
Claims priority, application United Kingdom, Jul. 25, 1981, 8123008
Int. Cl.³ H04H 5/00; H04S 7/00
U.S. Cl. 381—12 8 Claims



1. A circuit for use in association with an audio reproducing apparatus to indicate reproduction of a stereo signal, said circuit having:

first circuit means responsive to a difference in phase, but substantially unresponsive to a difference in amplitude, between audio signals prevailing in different output channels of said apparatus in order to generate a first signal;

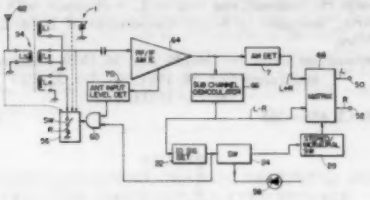
means to provide automatic level control amplification of audio signals prevailing in different output channels of said apparatus, said amplification means being included in the said first circuit means; and

further circuit means for utilizing said first signal to generate an indication of stereo reproduction.

4,455,674
AMPLITUDE-MODULATED SIGNAL RECEIVER HAVING A VARIABLE Q CIRCUIT

Shoji Sano, Sagamihara, Japan, assignor to Victor Company of Japan Limited, Yokohama, Japan

Filed Feb. 16, 1982, Ser. No. 349,340
Claims priority, application Japan, Feb. 19, 1981, 56-22383[U]; Mar. 5, 1981, 56-30530[U]
Int. Cl.³ H04B 1/16; H04H 5/00
U.S. Cl. 381—15 **16 Claims**

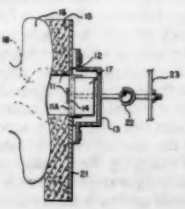


1. An AM signal receiver comprising:
(a) an input tuning circuit for selecting a desired AM radio frequency signal;
(b) frequency-converting circuit for converting said selected AM radio frequency signal fed from said input tuning circuit into an intermediate frequency signal having a predetermined center frequency;
(c) an intermediate frequency signal processing circuit for passing only a given frequency range centering said intermediate frequency;
(d) an AM detector for detecting an audio signal included in the output signal fed from said intermediate frequency signal processing circuit;
(e) a narrow-band filter responsive to the output signal from said intermediate frequency signal processing circuit, the pass band of said narrow-band filter being narrower than that of said intermediate frequency signal processing circuit;
(f) first means for detecting the magnitude of the output signal from said narrow-band filter for producing an output signal indicative of said magnitude; and
(g) second means for varying the value of Q of said input tuning circuit in accordance with said output signal from said first means.

4,455,675
HEADPHONING

Amar G. Bose, Wayland, and John Carter, Cambridge, both of Mass., assignors to Bose Corporation, Framingham, Mass.

Filed Apr. 28, 1982, Ser. No. 372,471
Int. Cl.³ H04R 1/10
U.S. Cl. 381—74 **9 Claims**

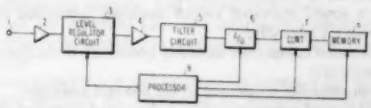


1. Headphone apparatus comprising,
driver means for converting an input electrical signal into an acoustical output signal and having a vibratable diaphragm,
housing means for supporting said driver means and having a cushion supporting bracket,
cushion means for engagement with said cushion supporting bracket and formed with a central opening defining a cavity accommodating said diaphragm for establishing a seal between said cushion supporting bracket and an outer ear to inhibit air flow between said cavity and the region outside said apparatus to significantly attenuate spectral components through the middle frequency range,
and electroacoustical means separate from said driver means for transducing an acoustical pressure signal in said cavity to a corresponding transduced electrical signal,
said electroacoustical transducing means being closely adjacent to said diaphragm and sufficiently close to the edge of said cavity away from said cushion support means so that said transducing means is responsive to the pressure in said cavity near the ear.

4,455,676
SPEECH PROCESSING SYSTEM INCLUDING AN AMPLITUDE LEVEL CONTROL CIRCUIT FOR DIGITAL PROCESSING

Hiroyuki Kaneda, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 4, 1982, Ser. No. 354,674
Claims priority, application Japan, Mar. 4, 1981, 56-30858
Int. Cl.³ H03G 7/00
U.S. Cl. 381—106 **5 Claims**



1. A speech processing system comprising:
an input circuit for receiving a speech signal and an environmental noise signal;
an analog-digital converter circuit for converting an analog value of said speech signal and said environmental noise signal to a digital value at a plurality of sampling points to produce a digital speech signal;
a regulating circuit coupled between said input circuit and said analog-digital converter circuit for regulating the amplitude of said speech signal to an optimal level in accordance with regulation data;
a memory having a first memory portion, a second memory portion and a third memory portion, said first memory portion storing first digital data for determining whether said speech signal should be input or not, said second memory portion storing second digital data for determining a start of said speech signal, and said third memory portion storing third digital data for determining an end of said speech signal; and
a control circuit coupled to said analog-digital converter circuit, said regulating circuit and said memory and having a detecting portion for detecting the noise level of said environmental noise signal received by said input circuit, a changing portion for adding a digital value corresponding to said noise level of said environmental noise signal to said first, second and third digital data to change said first, second and third digital data, respectively, a producing portion for producing said regulation data in response to said digital speech signal produced by said analog-digital converter circuit, a comparing portion for comparing said speech signal regulated to an optimal level by said regulating circuit with the changed first, second and third digital data, respectively, and a recognizing portion for recognizing the speech signal to be processed when the total sum in digital values of digital speech signals converted at a

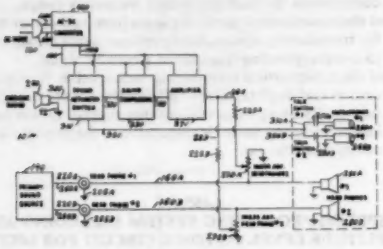
plurality of successive sampling points is larger than said changed first digital data.

4,455,677

MULTIPURPOSE HEADPHONE ASSEMBLY

Shaffer W. Fox, 510 E. Oliver St., Owosso, Mich. 48867

Filed May 27, 1982, Ser. No. 382,653
Int. Cl.³ H04M *1/19*
U.S. Cl. 381—110 **1 Claim**



1. A multipurpose headphone assembly comprising in combination the following elements:

(a) a power source; connected by electrical leads to the headphone assembly;

(b) an alternating to direct current converter assembly connected to the power source;

(c) a sound activated switch assembly connected to the convert assembly;

(d) a sound compressor assembly connected to the converter assembly;

(e) an amplifier connected to the convert assembly;

(f) electrical means connecting the sound activated switch assembly with the sound compressor and amplifier;

(g) a primary sound source with a plurality of headphone assemblies interconnected thereto; connected by electrical lead to the headphone assembly;

(h) microphone assemblies interconnected to each of the headphone assemblies and connected with the sound activated swith assembly;

(i) electrical means connecting the amplifier with each headphone assembly;

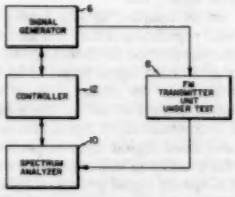
(j) manual switch means to cut off extraneous signals.

4,455,678

TEST METHOD AND DEVICE FOR FM TRANSMITTER

Frank A. McKiel, Jr., Dallas, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 3, 1981, Ser. No. 289,588
Int. Cl.³ H04B *17/00*
U.S. Cl. 455—115 **5 Claims**



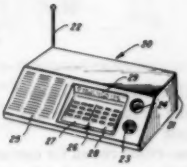
1. A technique for determining baseband frequency response of an FM transmitter, comprising applying to the transmitter a modulating signal which results in a frequency spectrum for the output of the transmitter having carrier and sideband amplitudes; further, measuring variations in one of said amplitudes in said output of the transmitter, while setting the frequency of the modulating signal at values selected to provide a frequency response, and controlling the amplitude of said modulating signal at each of said selected frequency values so as to maintain a constant modulation index B.

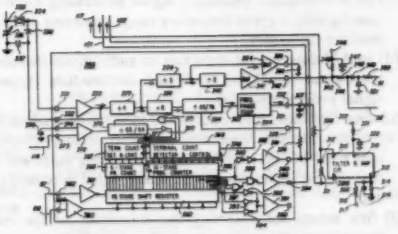
4,455,679

SCANNING RADIO RECEIVER AND FREQUENCY SYNTHESIZER THEREFOR

George H. Fathauer, and Warren L. Williamson, both of Mesa, Ariz., assignors to Masco Corporation of Indiana, Taylor, Mich.

Continuation of Ser. No. 34,739, Apr. 30, 1979, abandoned. This application Oct. 20, 1981, Ser. No. 313,213
Int. Cl.³ H03J *7/18*
U.S. Cl. 455—165 **9 Claims**





1. In a scanning radio receiver including oscillator means for producing a local oscillator signal and mixer means for responding to said local oscillator signal and to a received signal to produce a signal at an IF frequency for amplification and demodulation to produce an audio signal, said oscillator means including a voltage controlled oscillator for controlled operation to produce an output signal at a series of frequency values ranging up to an upper limit frequency in the upper portion of a VHF range from 144 to 174 MHz, frequency-phase detector means having a pair of inputs and arranged to produce an output voltage corresponding to differences in frequency-phase between signals applied to said inputs, means responsive to said output voltage for controlling said voltage controlled oscillator, high frequency reference signal means for supplying a high frequency reference signal at a fixed frequency, first and second frequency divider circuits for respectively responding to said high frequency reference signal and to said voltage controlled oscillator signal and for respectively applying first and second low frequency signals to said inputs of said frequency-phase detector means to effect control of the frequency of said voltage controlled oscillator in accordance with said fixed frequency and the division ratios of said divider circuits, control means for changing the division ratio of said second divider circuit in integer steps to change the frequency of said voltage controlled oscillator from one to another of said series of frequency values, said second frequency divider circuit including a first chain of cascaded stages forming a first divider section responsive to said output signal from said oscillator for producing an output signal at a certain sub-multiple of the

frequency of said output signal of said voltage controlled oscillator, and a second chain of cascaded stages forming a second divider section responsive to said output signal from said first divider section for producing said second low frequency signal for application to an input of said frequency-phase detector means, said second chain of cascaded stages of said second divider section including a programmable counter having a plurality of stages, said control means including means entering a first digital number for operating at the start of a counting operation to place said stages of said second divider section in conditions corresponding to digits of said digital number and to control the division ratio of said second divider circuit, said first and second chains of cascaded stages of said second frequency divider circuit being operative to produce said second low frequency signal by direct coundown from the frequency of said output signal from said voltage controlled oscillator.

4,455,680

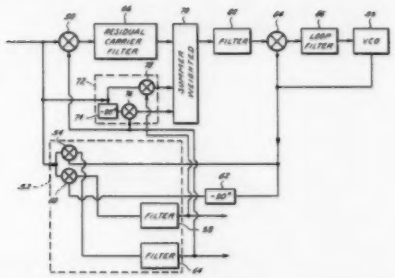
METHOD AND APPARATUS FOR RECEIVING AND TRACKING PHASE MODULATED SIGNALS

Salvador Villarreal, League City; Stuart D. Lenett, Houston; Herbert S. Kobayashi, Webster, and James F. Pawlowski, Houston, all of Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 737,975, Nov. 2, 1976, abandoned. This application May 7, 1980, Ser. No. 147,695

Int. Cl.³ H04B *1/26*

U.S. Cl. 455—208 **21 Claims**



1. A receiver for tracking and demodulating an incoming phase modulated communication signal, comprising:

(a) oscillator means for forming a local reference signal;

(b) phase detector means for detecting the phase of said incoming signal modulated with respect to said local reference signal;

(c) means for obtaining a residual carrier signal from said phase detected signal and said incoming signal;

(d) multiplier means for obtaining a converted series sideband carrier signal, representing the reconstructed incoming signal, from said phase detected signal and said incoming signal; and

(e) means for summing said residual carrier signal and said converted series sideband carrier signal to form a tracking carrier signal for controlling said oscillator means thereby to track said incoming signal.

4,455,681

DUAL THRESHOLD WIDE BAND/NARROW BAND AGC

Donald T. Wile, 2771 Longford Dr., San Jose, Calif. 95132

Filed Dec. 21, 1981, Ser. No. 332,574

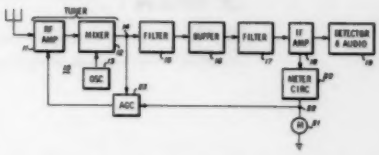
Int. Cl.³ H04B *1/16;* **H03F** *3/45*

U.S. Cl. 455—243 **6 Claims**

1. A dual threshold AGC circuit for a radio receiver that responds to variable strength signals with a first narrow band threshold and a second wide band threshold, both of which thresholds must be exceeded for said AGC to become functional, said receiver including a tuner comprising a variable gain radio frequency amplifier to produce an intermediate frequency signal, an intermediate frequency amplifier having an input coupled to said tuner, and means coupled to said intermediate frequency amplifier for developing a tuning meter output voltage which has a magnitude proportional to the in band intermediate frequency signal amplitude, said AGC circuit comprising:

a differential amplifier having first and second inputs, a single ended output, and a tail current supply;

means for modulating said tail current supply with said tuning meter voltage;



means coupled to said tail current supply for introducing a threshold in said tail current response to said tuning meter voltage whereby said tuning meter voltage must exceed said narrow band threshold to modulate said tail current;

a wide band control amplifier coupled to receive the input to said intermediate frequency amplifier and to drive said differential amplifier first and second inputs;

means for offsetting said first and second inputs of said differential amplifier to produce said wide band threshold; and

means responsive to said single ended output of said differential amplifier for developing an automatic gain control current for controlling the gain of said radio frequency amplifier.

4,455,682

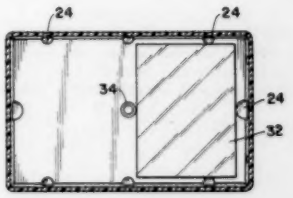
SUPERREGENERATIVE RADIO RECEIVER

David A. Masters, Norwalk, Ohio, assignor to Imperial Clevite Inc., Rolling Meadows, Ill.

Filed Apr. 5, 1982, Ser. No. 365,819

Int. Cl.³ H04B *1/08, 1/10*

U.S. Cl. 455—300 **3 Claims**



1. A superregenerative type radio receiver comprising a superregenerative radio circuit and an antenna mounted on a circuit board and received in a container including a base wall portion comprising material reflective to radio transmissions, said radio circuit being disposed to said base wall portion to shroud said radio circuit and being spaced from said base wall portion by a distance defined by a plurality of spacer members interposed between said circuit board and said wall portion and wherein said base wall portion reflects radio transmissions to said antenna to provide additive in-phase gain at said antenna for a pre-selected tuned frequency, whereby said radio receiver is adapted to be installed contiguous to metallic items and maintain tuned frequency stability.

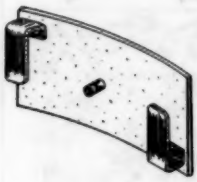
DESIGN PATENTS

GRANTED JUN. 19, 1984

ERRATA

For CLASS	See PATENT NO.
D01–024	274,313
D16–032	274,325

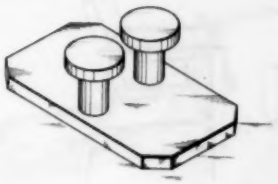
274,289
SWIVEL BELT BUCKLE
Raymond Kuntz, 650 Warwick Tpke., Hewitt, N.J. 07421
Filed Jul. 22, 1981, Ser. No. 249,091
Term of patent 14 years
U.S. Cl. D2—405



274,290
BABY SHOE
Ben R. Migdow, 945 Timberhill Rd., Highland Park, Ill. 60035
Filed Jun. 18, 1981, Ser. No. 274,752
Term of patent 14 years
U.S. Cl. D2—278

274,291
BABY SHOE
Ben R. Migdow, 945 Timberhill Rd., Highland Park, Ill. 60035
Filed Jun. 18, 1981, Ser. No. 275,135
Term of patent 14 years
U.S. Cl. D2—278

274,292
BOOT JACK OR SIMILAR ARTICLE
Kenneth L. Shireman, 2003 Beumer, Stuttgart, Ark. 72160
Filed Feb. 12, 1982, Ser. No. 348,285
Term of patent 14 years
U.S. Cl. D2—378.2



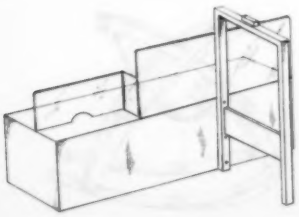
274,293
PIVOTAL BELT BUCKLE
Georges Goepfer, Asnieres, France, assignor to Etablissements Goepfer, France
Filed Dec. 1, 1981, Ser. No. 326,191
Claims priority, application France, Jun. 3, 1981, 81 2023
Term of patent 14 years
U.S. Cl. D2—414

274,294
CHAIR
Bradford R. de Graf, 3805 Belle River Ter., Alexandria, Va. 22309
Filed Mar. 4, 1980, Ser. No. 127,091
Term of patent 14 years
U.S. Cl. D6—49

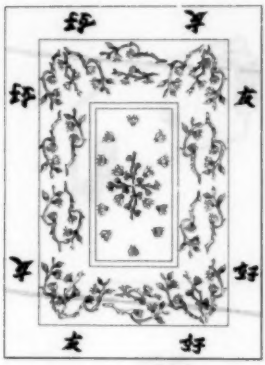
274,295
CHAIR OR SIMILAR ARTICLE
Herbert C. Saiger, Troy, Ohio, assignor to Pawleys Island Hammock Corporation, Pawleys Island, S.C.
Filed Feb. 23, 1982, Ser. No. 351,680
Term of patent 14 years
U.S. Cl. D6—73

274,296
DISPLAY HOLDER FOR CARDS OR THE LIKE
Richard M. Liptak, Parma Heights, Ohio, assignor to Integral Design, Inc., Cleveland, Ohio
Division of Ser. No. 137,768, Apr. 7, 1980, Pat. No. Des. 265,448. This application Apr. 2, 1982, Ser. No. 365,034
Term of patent 14 years
U.S. Cl. D6—140

274,297
COMBINED CHECKOUT COUNTER AND SHOPLIFTING DETECTOR
Donald L. Wright, 2277 Elysium Ave., Eugene, Oreg. 97401
Filed Jun. 25, 1981, Ser. No. 277,400
Term of patent 14 years
U.S. Cl. D6—143

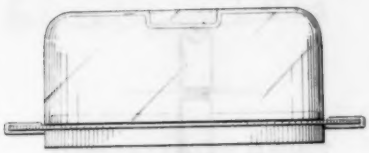


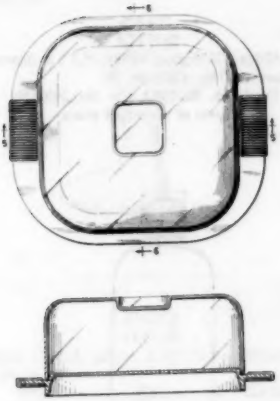
274,298
RUG OR SIMILAR ARTICLE
James S. Thompson, 10616 Dunkirk Dr., Silver Spring, Md. 20902
Filed Jul. 29, 1981, Ser. No. 288,552
Term of patent 14 years
U.S. Cl. D6—210



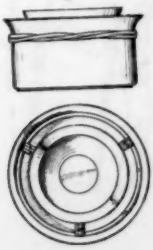
274,299
COMBINED FOOD AND BEVERAGE TRAY
Ruth G. Kessler, 1730 Avenida del Mundo #1604, Coronado, Calif. 92118
Filed Feb. 24, 1982, Ser. No. 351,861
Term of patent 14 years
U.S. Cl. D7—5

274,300
COVERED CHEESE PLATTER
Ambrogio Pozzi, Gallarate, Italy, assignor to F.LLI Guzzini S.p.A., Recanati, Italy
Filed Mar. 30, 1981, Ser. No. 248,890
Claims priority, application Italy, Sep. 29, 1980, 22951/80[U]
Term of patent 14 years
U.S. Cl. D7—18

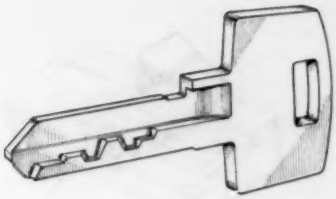




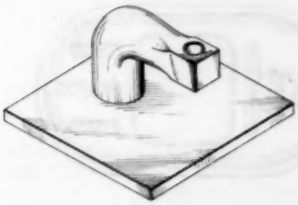
274,301
CAVIAR-CUP
Joseph Kanoui, Geneva, Switzerland, assignor to Interdica S.A., Villars-sur-Glane, Switzerland
Filed Nov. 30, 1981, Ser. No. 325,921
Claims priority, application The Hague, May 29, 1981, 71 465
Term of patent 14 years
U.S. Cl. D7—27



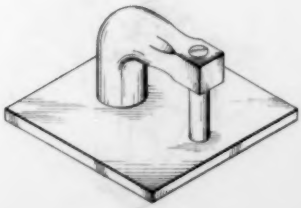
274,302
CODED KEY BLANK
Bo Widén, Torshälla, Sweden, assignor to GKN-Stenman AB, Eskilstuna, Sweden
Filed Feb. 10, 1982, Ser. No. 347,615
Claims priority, application Sweden, Aug. 14, 1981, 81-1747
Term of patent 14 years
U.S. Cl. D8—347



274,303
TIE-DOWN MEMBER
Robert C. Kucher, 3819 - 92nd Ave. Northeast, Bellevue, Wash. 98004
Filed Aug. 6, 1979, Ser. No. 63,933
Term of patent 14 years
U.S. Cl. D8—382

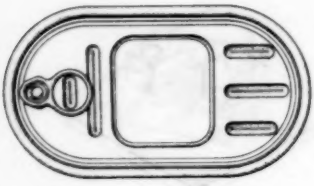


274,304
TIE-DOWN MEMBER
Robert C. Kucher, 3819 - 92nd Ave. NE., Bellevue, Wash. 98004
Filed Aug. 6, 1979, Ser. No. 63,934
Term of patent 14 years
U.S. Cl. D8—382



274,305
COMBINATION LOCK FOR LUGGAGE OR SIMILAR TYPE ARTICLE-RETAINING CONTAINER
Urs Gisiger, Seizach, Switzerland, assignor to Amiet AG, Oberdorf, Switzerland
Filed Apr. 1, 1982, Ser. No. 364,425
Claims priority, application Hague, Oct. 29, 1981, 71 886
Term of patent 14 years
U.S. Cl. D8—338

274,306
CAN
Harald Lien, Minde, and Erling Rokne, Fyllingsdalen, both of Norway, assignors to Noblikk-Sannem A/S, Norway
Filed Sep. 14, 1981, Ser. No. 302,382
Term of patent 14 years
U.S. Cl. D9—368

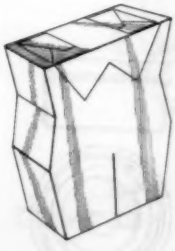


274,307
CONTAINER FOR LIQUIDS OR THE LIKE
Felix J. Ledda, 91 Winant St., Staten Island, N.Y. 10303
Filed Nov. 19, 1981, Ser. No. 322,865
Term of patent 14 years
U.S. Cl. D9—372

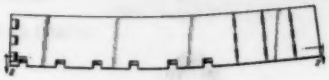
274,308
PERFUME BOTTLE
Maurice H. Roger, Croissy-sur-Seine, France, assignor to Les Parfums de Molyneux S.A., Paris, France
Filed Oct. 23, 1981, Ser. No. 314,111
Claims priority, application Hague, Apr. 29, 1981, DM/000730
Term of patent 14 years
U.S. Cl. D9—377

274,309
BOTTLE
Thomas B. Aldrich, III, Spring Valley, N.Y., assignor to Helene Curtis Industries, Inc., Chicago, Ill.
Filed Feb. 16, 1982, Ser. No. 348,820
Term of patent 14 years
U.S. Cl. D9—403

274,310
CIGAR CASE
Jin S. Kim, 812 Chim San 1st Dong, Taegu, Rep. of Korea
Filed Dec. 30, 1981, Ser. No. 335,670
Term of patent 14 years
U.S. Cl. D9—431



274,311
BLANK FOR AN ADJUSTABLE BASKET FILLER
Garrett J. Kyte, SRI 32A Smith Island, Ewell, Md. 21824
Filed Nov. 18, 1980, Ser. No. 207,876
Term of patent 14 years
U.S. Cl. D9—433

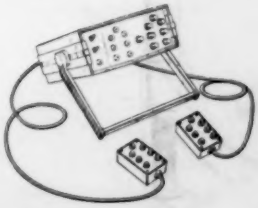


274,312
LOOSE FILL PACKING ELEMENT
Henry C. Witte, Germantown, Tenn., assignor to Inter-Pac Packaging Corporation, Memphis, Tenn.
Filed Jan. 18, 1982, Ser. No. 343,447
Term of patent 14 years
U.S. Cl. D9—456

274,313
CLOCK
Koki Tanaka, Tokyo, Japan, assignor to Seikosha Co., Ltd., Tokyo, Japan
Filed Dec. 22, 1981, Ser. No. 333,625
Claims priority, application Japan, Jun. 23, 1981, 56-27414
Term of patent 14 years
U.S. Cl. D10—24

274,314
ELECTRONIC TIMING AND CONTROLLING DEVICE
John W. Goodin, Long Beach; Edward E. Albright, Santa Ana, and Amy K. Tamura, Long Beach, all of Calif., assignors to Dart Industries Inc., Northbrook, Ill.
Filed Dec. 16, 1981, Ser. No. 331,437
Term of patent 14 years
U.S. Cl. D10—40

274,315
SCORING DEVICE FOR GAMES
James T. Hannah, 1 Cooinda Ct., Salisbury Heights, State of South Australia, Commonwealth of Australia, Australia
Filed Apr. 24, 1981, Ser. No. 257,498
Claims priority, application Australia, Oct. 30, 1980, 82476
Term of patent 14 years
U.S. Cl. D10—46.1



274,316
COMBINED DIGITAL CLOCK AND MOUNTING
Yuk-Shing Yeung, Hong Kong, Hong Kong, assignor to Youngs Products, Ltd., Hong Kong, Hong Kong
Filed Feb. 8, 1982, Ser. No. 346,853
Claims priority, application United Kingdom, Aug. 10, 1981, 811001903
Term of patent 14 years
U.S. Cl. D10—15

274,317
SELF-POWERED ILLUMINATED SIGNAL
Robert E. Nelson, Sterling, Va., assignor to Isotope Technologies Corporation, Greenbelt, Md.
Filed Jan. 6, 1982, Ser. No. 337,401
Term of patent 14 years
U.S. Cl. D10—114

274,318
RING
Marina Bulgari, Athens, Greece, assignor to Zoldia Anstalt, Vaduz, Liechtenstein
Filed Dec. 30, 1981, Ser. No. 335,749
Claims priority, application Italy, Jul. 2, 1981, 35895/81[U]
Term of patent 14 years
U.S. Cl. D11—27

274,319
RING
Marina Bulgari, Athens, Greece, assignor to Zoldia Anstalt, Vaduz, Liechtenstein
Filed Oct. 9, 1981, Ser. No. 310,320
Claims priority, application Italy, Apr. 13, 1981, 35741/81[U]
Term of patent 14 years
U.S. Cl. D11—34

274,320
CABLE SUPPORTED PERSONNEL CARRIER

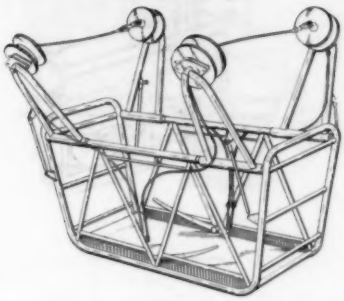
Terence Kelly, Birmingham, England, assignor to TI Reynolds Limited, Birmingham, England

Filed May 3, 1982, Ser. No. 374,484

Claims priority, application United Kingdom, Nov. 5, 1981, 81-1003436

Term of patent 14 years

U.S. Cl. D12—37



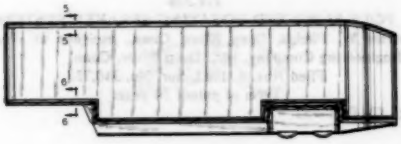
274,321
TRAILER

Edward J. Hayes, Ann Arbor; Frank J. Miller, Warren, and Francis P. Tylenda, Grosse Pointe Farms, all of Mich., assignors to Fruehauf Corporation, Detroit, Mich.

Filed Mar. 23, 1982, Ser. No. 360,950

Term of patent 14 years

U.S. Cl. D12—97



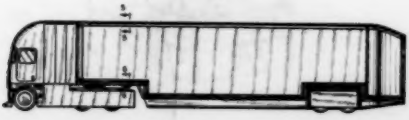
274,322
TRACTOR TRAILER

Edward J. Hayes, Ann Arbor; Frank J. Miller, Warren, and Francis P. Tylenda, Grosse Pointe Farms, all of Mich., assignors to Fruehauf Corporation, Detroit, Mich.

Filed Mar. 23, 1982, Ser. No. 361,029

Term of patent 14 years

U.S. Cl. D12—97



274,323
TIRE TREAD

Herbert J. Roelle, Muscatine, and John Burche, Davenport, both of Iowa, assignors to Bandag, Incorporated, Muscatine, Iowa

Filed Jan. 8, 1982, Ser. No. 338,188

Term of patent 14 years

U.S. Cl. D12—147

274,324
MUD FLAP

Knut Arenhold, Westend 7, 2000 Hamburg 52, Fed. Rep. of Germany

Filed Dec. 22, 1981, Ser. No. 333,313

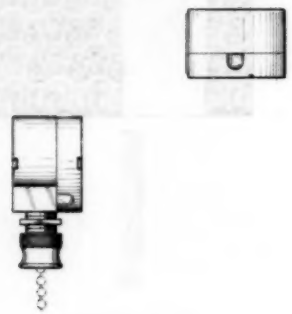
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1981, 1206/81

The portion of the term of this patent subsequent to Sep. 15, 1995, has been disclaimed.

Term of patent 14 years

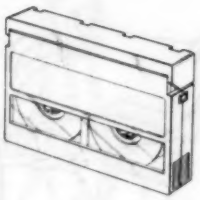
U.S. Cl. D12—185

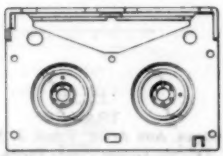
274,325
SWITCH
Wolfgang F. Bienwald, Melville, and David B. Balaban, Douglaston, both of N.Y., assignors to Leviton Manufacturing Company, Inc., Little Neck, N.Y.
Filed Oct. 7, 1981, Ser. No. 309,320
The portion of the term of this patent subsequent to Feb. 28, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D16—32



274,326
CIRCUIT BREAKER HANDLE
George S. Harper, Cambridge, Md., assignor to North American Philips Controls Corporation, Cambridge, Md.
Filed Oct. 3, 1980, Ser. No. 193,479
Term of patent 14 years
U.S. Cl. D13—34

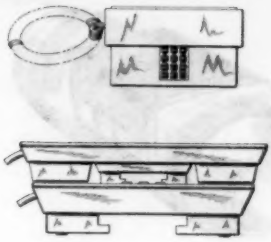
274,327
CASSETTE FOR VIDEO TAPE RECORDER
Hidemichi Sumisha, Osaka, and Seiko Minamide, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jan. 4, 1982, Ser. No. 336,990
Claims priority, application Japan, Jul. 30, 1981, 56-33934
Term of patent 14 years
U.S. Cl. D14—11



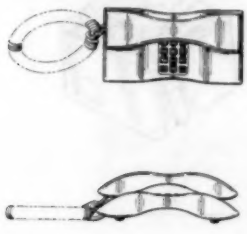


274,328
POLE MOUNTED ROTATING SPEAKER SYSTEM
Charles W. Phelps, Deep River, Conn., assignor to Whelen Engineering Company, Inc., Deep River, Conn.
Filed Nov. 6, 1981, Ser. No. 318,732
Term of patent 14 years
U.S. Cl. D14—32

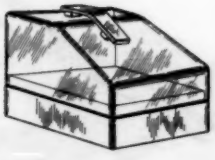
274,329
TELEPHONE
Myra Winkler, West Hartford, Conn., assignor to Teleconcepts, Inc., West Hartford, Conn.
Filed Jan. 6, 1982, Ser. No. 337,470
Term of patent 14 years
U.S. Cl. D14—53



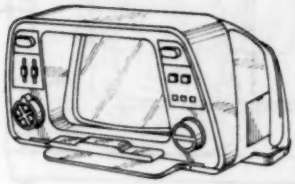
274,330
TELEPHONE
Myra Winkler, West Hartford, Conn., assignor to Teleconcepts, Inc., West Hartford, Conn.
Filed Jan. 6, 1982, Ser. No. 337,471
Term of patent 14 years
U.S. Cl. D14—53



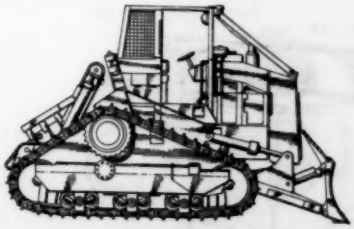
274,331
ENCLOSURE FOR TELEPHONE AND THE LIKE
Lee Karsch, 30 Joan Dr., Chappaqua, N.Y. 10514
Filed Aug. 27, 1982, Ser. No. 412,275
Term of patent 14 years
U.S. Cl. D14—60



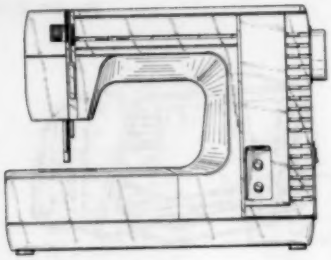
274,332
CTR TERMINAL FOR VEHICLE NAVIGATION
Nobuhiko Suzuki, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 7, 1981, Ser. No. 309,504
Claims priority, application Japan, Apr. 23, 1981, 56-017471
Term of patent 14 years
U.S. Cl. D14—106

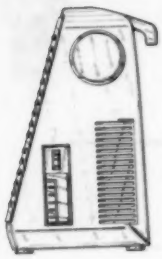


274,333
TRACK TYPE LOG SKIDDING MACHINE
Thomas C. Meisel, Jr., Peoria, and James E. Gee, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Jan. 29, 1982, Ser. No. 343,786
Term of patent 14 years
U.S. Cl. D15—24

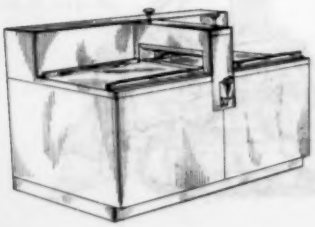


274,334
SEWING MACHINE
Yoshiaki Eguchi, Higashimurayama, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan
Filed Apr. 6, 1981, Ser. No. 251,316
Claims priority, application Japan, Oct. 8, 1980, 55-41605
Term of patent 14 years
U.S. Cl. D15—70

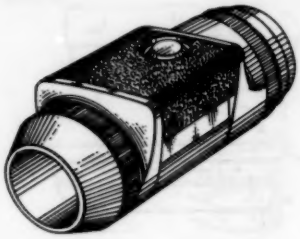




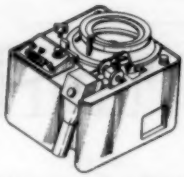
274,335
DIE CUTTING APPARATUS
Henry H. Jenkins, 864 W. Hacienda Dr., Corona, Calif. 91720
Filed Apr. 30, 1981, Ser. No. 259,010
Term of patent 14 years
U.S. Cl. D15—128



274,336
HOUSING FOR A RIFLESCOPE EYEPIECE AND RETICLE
Claus O. Huckenbeck, Bear Valley, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Apr. 15, 1981, Ser. No. 254,430
Term of patent 14 years
U.S. Cl. D16—132



274,337
CHANGE COUNTING MACHINE
Warren Austin; Alex Penny, both of West Chester, Pa., assignor to Aaccurate Counters Company, West Chester, Pa.
Filed Jan. 18, 1982, Ser. No. 340,239
Term of patent 14 years
U.S. Cl. D18—3



274,338
COMBINED WRITING INSTRUMENT AND CAP
Jean G. Malamoud, Saint-Jorioz, France, assignor to S. T. Dupont, Paris, France
Division of Ser. No. 176,446, Aug. 8, 1980. This application Dec. 22, 1980, Ser. No. 219,399
Claims priority, application France, Feb. 20, 1980, 800443
Term of patent 14 years
U.S. Cl. D19—51

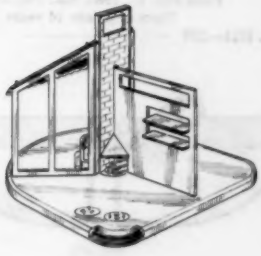
274,339
WRITING INSTRUMENT CAP
Jean G. Malamoud, Saint-Jorioz, France, assignor to S. T. Dupont, Paris, France
Division of Ser. No. 176,446, Aug. 8, 1980. This application Dec. 22, 1980, Ser. No. 219,400
Claims priority, application France, Feb. 20, 1980, 80 0443
Term of patent 14 years
U.S. Cl. D19—57

274,340
GLOBE STAND
Hossain Reyhani, Rödermark, Fed. Rep. of Germany, assignor to Scan-Globe A/S, Havdrup, Denmark
Filed May 20, 1982, Ser. No. 380,301
Claims priority, application Denmark, Dec. 2, 1981, 1152/81
Term of patent 14 years
U.S. Cl. D19—61

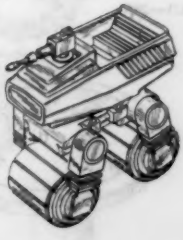
274,341
GAME BOARD
Michael Langieri, Jr., Longmeadow; Wayne J. Yee, Springfield, and Howard L. Steinberg, Longmeadow, all of Mass., assignors to Milton Bradley International, Inc., Springfield, Mass.
Filed Feb. 1, 1982, Ser. No. 344,597
Term of patent 14 years
U.S. Cl. D21—17

274,342
TOY PONY ROCKER
Carol Snyder, Chicago; Anita F. Mohn-Schwartz, Oak Park, both of Ill., and Joyce Christopher, Santa Paula, Calif., assignors to Milton Bradley International, Inc., Springfield, Mass.
Filed Feb. 12, 1982, Ser. No. 348,642
Term of patent 14 years
U.S. Cl. D21—70

274,343
TOY ROOM DISPLAY
Dale I. Goldberg, and Douglas R. Miller, both of Cincinnati, Ohio, assignors to CPG Products Corp., Minneapolis, Minn.
Filed Nov. 25, 1981, Ser. No. 325,078
Term of patent 14 years
U.S. Cl. D21—114

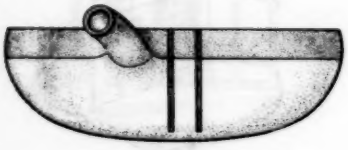


274,344
TOY VEHICLE
Mark D. Boudreaux, Cincinnati, Ohio, and Mark D. Duennes, New Baltimore, Mich., assignors to CPG Products Corp., Minneapolis, Minn.
Filed Dec. 16, 1981, Ser. No. 331,430
Term of patent 14 years
U.S. Cl. D21—128



274,345
TOY TRICYCLE
Carol Snyder, Chicago; Anita F. Mohn-Schwartz, Oak Park, both of Ill., and Joyce Christopher, Santa Paula, Calif., assignor to Milton Bradley International, Inc., Springfield, Mass.
Term of patent 14 years
U.S. Cl. D21—134

274,346
MALLET STYLE PUTTER HEAD
Charles G. Giebel, and Gary Spencer, both of Phoenix, Ariz., assignors to Acushnet Company, New Bedford, Mass.
Filed Jun. 11, 1981, Ser. No. 272,977
Term of patent 14 years
U.S. Cl. D21—219

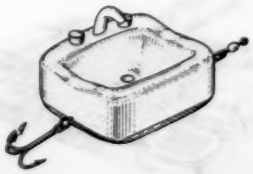


274,347
SWING SEAT
Donald F. Budde, St. Louis County, Mo., assignor to Urethane Roller Specialists, Inc., Eureka, Mo.
Filed Mar. 6, 1981, Ser. No. 241,464
Term of patent 14 years
U.S. Cl. D21—246

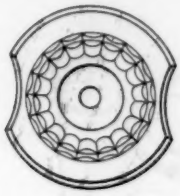
274,348
MISSILE-SHAPED FIREWORK
Wang Chiehyi, No. 179-1, Liu Tzu Lin Suei Shang Hsiang, Chia Yi, Taiwan
Filed Jun. 24, 1982, Ser. No. 391,934
Term of patent 14 years
U.S. Cl. D22—10

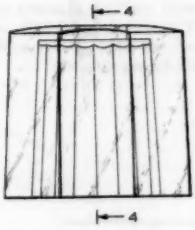
274,349
FISHING REEL
Seiji Myojo, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan
Filed Jul. 12, 1982, Ser. No. 397,239
Claims priority, application Japan, Jan. 11, 1982, 57-678
Term of patent 14 years
U.S. Cl. D22—25

274,350
FISHING LURE
Vaughn Schaaf, 8256 Glen Arbor Rd., Ben Lomond, Calif. 95005
Filed May 6, 1982, Ser. No. 375,363
Term of patent 14 years
U.S. Cl. D22—27

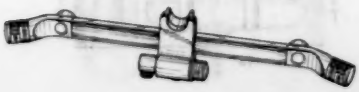


274,351
HANDLE FOR A SANITARY FITTING
James E. Niemann, Louisville, Ky., assignor to American Standard, Inc., New York, N.Y.
Division of Ser. No. 169,538, Jul. 17, 1980. This application Dec. 20, 1982, Ser. No. 451,510
Term of patent 14 years
U.S. Cl. D23—28





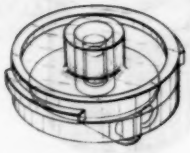
274,352
COMBINED SIDE SHOWER HEADS AND HAND SHOWER CONNECTOR
Andreas Haug, Altensteig, Fed. Rep. of Germany, assignor to Hans Grohe GmbH & Co., Fed. Rep. of Germany
Filed Jul. 9, 1981, Ser. No. 281,630
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1981, 1017
Term of patent 14 years
U.S. Cl. D23—57



274,353
HEAT EXCHANGE UNIT
Walter W. Hoyle, Fayetteville; Michael E. Smorol, Syracuse; Rudy E. Haas, East Syracuse; Raymond D. O'Mara, Mallory, and Joseph A. Ciarlei, Brewerton, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Mar. 3, 1981, Ser. No. 240,203
Term of patent 14 years
U.S. Cl. D23—139

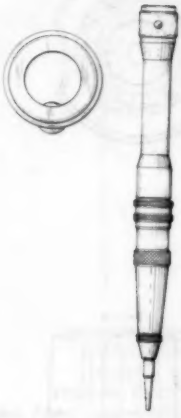
274,354
FAN
John Mezey, Edison, N.J., assignor to Van Wyck International Corporation, Minoola, N.Y.
Filed Oct. 26, 1981, Ser. No. 314,881
Term of patent 14 years
U.S. Cl. D23—160

274,355
CASSETTE FOR CONTROLLING THE FLOW OF INTRAVENOUS FLUID TO A PATIENT
Raymond E. Cannon, San Diego, Calif., assignor to Imed Corporation, San Diego, Calif.
Filed Nov. 16, 1981, Ser. No. 321,183
Term of patent 14 years
U.S. Cl. D24—8

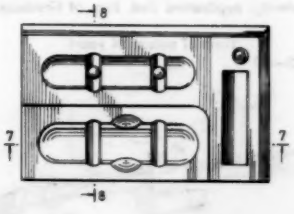


274,356
VAGINAL SPECULUM
Edwin H. Riedell, 412 W. Hermosa Dr., Fullerton, Calif. 92635
Filed Sep. 14, 1981, Ser. No. 302,163
Term of patent 14 years
U.S. Cl. D24—18

274,357
DENTAL IMPACTOR HANDPIECE OR SIMILAR ARTICLE
Jack Moreno, Bethel, Conn., assignor to Blackstone Industries, Inc., Bethel, Conn.
Filed Jan. 18, 1982, Ser. No. 339,775
Term of patent 14 years
U.S. Cl. D24—12

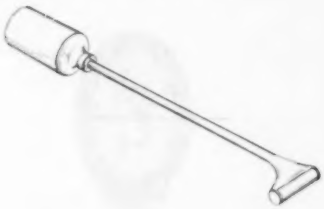


274,358
TEST-INDICATOR TRAY FOR STORING A VAGINAL MUSCLE STIMULATION DEVICE
Danijel Knez, Celje, and Peter Suhel, Ljubljana, both of Yugoslavia, assignors to Gorenje Tgo, Nsol.O, Velenje, Velenje, Yugoslavia
Filed Mar. 23, 1981, Ser. No. 246,189
Claims priority, application Yugoslavia, Sep. 29, 1980, M-362/80
Term of patent 14 years
U.S. Cl. D24—31

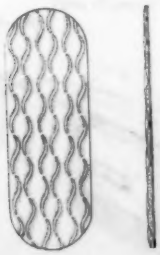


274,359
SUBTALAR ARTHROEREISIS IMPLANT
James M. Christensen, San Diego, and Thomas E. Sgarlato, Los Gatos, both of Calif., assignors to Sutter Biomedical, Inc., San Digeo, Calif.
Filed Oct. 29, 1981, Ser. No. 316,231
Term of patent 14 years
U.S. Cl. D24—34

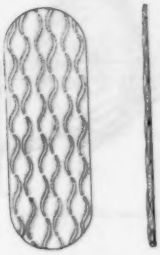
274,360
HANDHELD BODY MASSAGER
Jose L. Gómez, 4525 Broadway Apt. 5, Union City, N.J. 07087
Filed Feb. 11, 1982, Ser. No. 347,775
Term of patent 14 years
U.S. Cl. D24—36



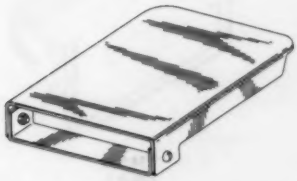
274,361
THIN ABSORBENT PAD FOR A PANTY LINER OR THE LIKE
Howard A. Whitehead, 513 E. Pershing St., Appleton, Wis. 54911
Filed Feb. 13, 1978, Ser. No. 877,402
Term of patent 14 years
U.S. Cl. D24—51



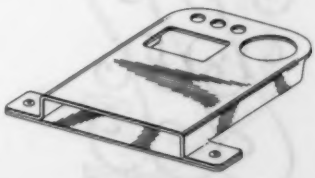
274,362
THIN ABSORBENT PAD FOR A PANTY LINER OR THE LIKE
Howard A. Whitehead, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Feb. 13, 1978, Ser. No. 877,404
Term of patent 14 years
U.S. Cl. D24—51



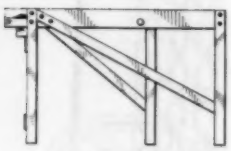
274,363
STEPLADDER SHELF EXTENSION
Merrel F. Brownlee, Jr., Struthers, Ohio, assignor to Brownlee Stepladder Extensions, Inc., Struthers, Ohio
Filed Jun. 28, 1982, Ser. No. 393,136
Term of patent 14 years
U.S. Cl. D25—68



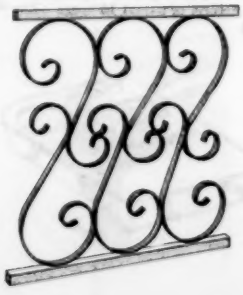
274,364
STEPLADDER TOP EXTENSION
Merrel F. Brownlee, Jr., Struthers, Ohio, assignor to Brownlee Stepladder Extensions, Inc., Struthers, Ohio
Filed Jun. 28, 1982, Ser. No. 393,137
Term of patent 14 years
U.S. Cl. D25—68



274,365
COLLAPSIBLE SAW HORSE OR THE LIKE
Casimir H. Lipinski, 503 S. 17th St., Fernandina Beach, Fla. 32034
Filed Jun. 21, 1982, Ser. No. 390,304
Term of patent 14 years
U.S. Cl. D25—67

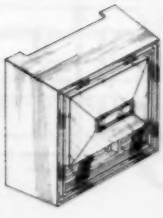


274,366
GRILL
Harvey Porter, Narberth, and Rubina M. Long, Philadelphia, both of Pa., assignors to Royal Factories, Inc., Philadelphia, Pa.
Filed Jun. 2, 1982, Ser. No. 384,656
Term of patent 14 years
U.S. Cl. D25—87



274,367
CANDLESTICK
Johan Anders C. Anderson, Gävle, Sweden, assignor to Scandinavian Metal Products SMP, Gävle, Sweden
Filed Sep. 11, 1981, Ser. No. 301,364
Claims priority, application Sweden, Mar. 30, 1981, 81-814
Term of patent 14 years
U.S. Cl. D26—10

274,368
COMBINED EMERGENCY POWER LOSS LIGHT AND ALARM
John S. Skarman, Newport Beach, Calif., assignor to Southwest Laboratories, Inc., Santa Ana, Calif.
Filed Jan. 25, 1982, Ser. No. 342,095
Term of patent 14 years
U.S. Cl. D26—26



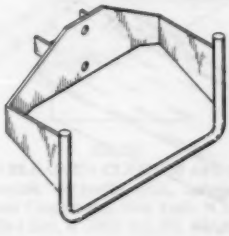
274,369
NIGHTLIGHT
Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.
Filed Apr. 7, 1982, Ser. No. 366,121
Term of patent 14 years
U.S. Cl. D26—26

274,370
NIGHTLIGHT
Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.
Filed Apr. 7, 1982, Ser. No. 366,122
Term of patent 14 years
U.S. Cl. D26—26

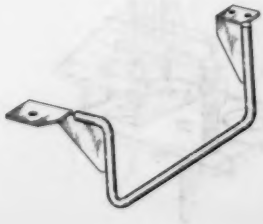
274,371
REAR WINDOW STOP LIGHT
Donald J. Shanklin, 1652 N. Mountain View Pl., Fullerton, Calif. 92631
Filed Mar. 26, 1982, Ser. No. 362,136
Term of patent 14 years
U.S. Cl. D26—28

274,372
NIGHTLIGHT COVER
Frederic W. Schwartz, Providence, R.I.
Filed Apr. 7, 1982, Ser. No. 366,120
Term of patent 14 years
U.S. Cl. D26—126

274,373
AUTOMOBILE FOG LAMP GUARD
Helmut Habicht, 15 Royal Park Ter., Hillsdale, N.J. 07642
Filed Apr. 29, 1982, Ser. No. 373,230
Term of patent 14 years
U.S. Cl. D26—139

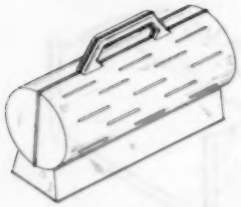


274,374
AUTOMOBILE FOG LAMP GUARD
Helmut Habicht, 15 Royal Park Ter., Hillsdale, N.J. 07642
Filed Apr. 29, 1982, Ser. No. 373,270
Term of patent 14 years
U.S. Cl. D26—139

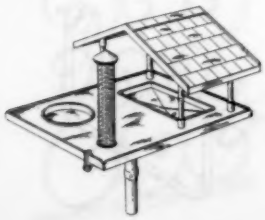


274,375
COMBINED TOOTHPICK AND DENTAL FLOSS HOLDER
Norman E. Tomlin, Chung Hom Kok, Hong Kong, assignor to Tomex (Hong Kong) Ltd., Wanchai, Hong Kong
Filed May 4, 1982, Ser. No. 374,811
Claims priority, application United Kingdom, Nov. 26, 1981, 1003829
Term of patent 14 years
U.S. Cl. D28—64

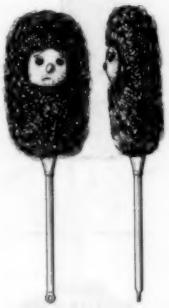
274,376
GAME BIRD RELEASING BOX
Robert L. Hann, and Richard L. Boswell, both of Loveland, Colo., assignors to Duck Haven, Inc., Loveland, Colo.
Filed Mar. 17, 1982, Ser. No. 359,101
Term of patent 14 years
U.S. Cl. D30—1



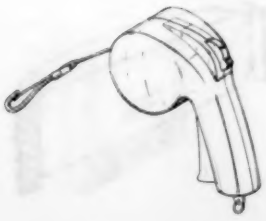
274,377
BIRD FEEDER
Robert K. Nock, Halesowen, England, assignor to Silverthorne-Gillott Limited, West Midlands, England
Filed Apr. 5, 1982, Ser. No. 365,877
Claims priority, application United Kingdom, Nov. 24, 1981, 1,003,774
Term of patent 14 years
U.S. Cl. D30—14



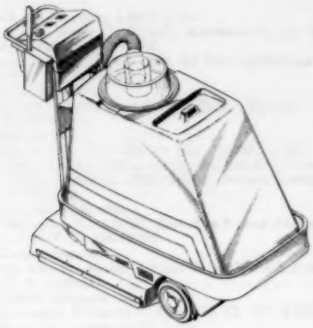
274,378
PET DUSTER
Patricia M. DeBrouse, 1467 Justin Pl., Crofton, Md. 21114
Filed May 7, 1981, Ser. No. 261,520
Term of patent 14 years
U.S. Cl. D30—40



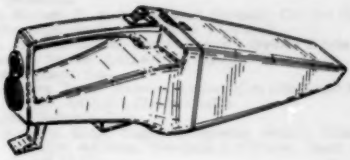
274,379
RETRACTABLE ANIMAL LEASH
Arnold T. Talo, Huntington Beach, Calif., assignor to Robert Weymar, Westminster, Calif.
Filed Dec. 13, 1982, Ser. No. 449,532
Term of patent 14 years
U.S. Cl. D30—39



274,380
SELF-PROPELLED CARPET SHAMPOOING MACHINE
Gary E. Palmer, Littleton, Colo., assignor to Windsor Industries, Inc., Englewood, Colo.
Filed Apr. 19, 1982, Ser. No. 369,554
Term of patent 14 years
U.S. Cl. D32—16



274,381
VACUUM CLEANER
Lawrence L. Chiu, Hong Kong, Hong Kong, assignor to Joiner Electric Products Co. Limited, Hong Kong
Filed May 6, 1982, Ser. No. 375,743
Claims priority, application United Kingdom, Nov. 9, 1981, 1003495
Term of patent 14 years
U.S. Cl. D32—18



274,382
VACUUM CLEANER
Michael A. Cousins, New York, and John Lonczak, Searsdale, both of N.Y., assignors to Dynamic Classics, Ltd., New York, N.Y.
Filed Sep. 27, 1982, Ser. No. 423,618
Term of patent 14 years
U.S. Cl. D32—18

274,383
DISPOSABLE OVEN CLEANER APPLICATOR
Joseph G. Banasiak, Sayreville, N.J., assignor to American Home Products Corporation, New York, N.Y.
Filed Dec. 6, 1982, Ser. No. 446,906
Term of patent 14 years
U.S. Cl. D32—45

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF JUNE, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Monk and Company Limited: *See*—
Eccleston, Barry C.; Sinclair, Alexander S.; and Elliot, Michael, 4,454,818, Cl. 104-98.000.

Aaserude, Gordon V. Apparatus for hanging lanterns from vehicles. 4,455,006, Cl. 248-205.500.

AB Stil-Industri: *See*—
Haglund, Lennart; and Johansson, Sigvard, 4,454,634, Cl. 24-636.000.

Abe, Shinya: *See*—
Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Suzuki, Takeshi; Kinoshita, Kensaku; Mishima, Mannen; Katoh, Yoshinori; Kobayashi, Seiichi; Murakami, Manabu; and Yamada, Kouzi, 4,455,316, Cl. 424-274.000.

Abernathy, Lloyd E.: *See*—
Miller, Allen W.; Carroll, Cornelius F.; and Abernathy, Lloyd E., 4,454,857, Cl. 124-87.000.

Abex Corporation: *See*—
Born, Ellis H.; Meisel, William H.; and Wolfe, Paul B., 4,455,124, Cl. 417-218.000.

Ace Medical Company: *See*—
Schwentker, Edwards P., 4,454,870, Cl. 128-75.000.

ACF Industries, Incorporated: *See*—
Schipper, Dennis J., 4,455,110, Cl. 406-39.000.

Aciers et Outillage Peugeot: *See*—
Barge, Jean, 4,454,776, Cl. 74-2.000.

Ackermann, Keith A.: *See*—
Schoenheimer, Marcus F.; Gaskell, Lionel A.; and Ackermann, Keith A., 4,454,890, Cl. 137-62.000.

Actrol Industries Pty. Ltd.: *See*—
Schoenheimer, Marcus F.; Gaskell, Lionel A.; and Ackermann, Keith A., 4,454,890, Cl. 137-62.000.

Adachi, Masakazu, to Otsuka Pharmaceutical Co., Ltd. Process for determining tumor-associated glycolinkage. 4,455,380, Cl. 436-504.000.

Addleman, Jeffrey L.: *See*—
Goehler, Robert F.; Addleman, Jeffrey L.; and Rotz, Dana R., 4,454,780, Cl. 74-87.000.

Advanced Technology Laboratories, Inc.: *See*—
Seader, Leonard D., 4,454,884, Cl. 128-660.000.

Afanasiev, Valentin N.: *See*—
Sizyakov, Viktor M.; Kaluzhsky, Nikolai A.; Badaiants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Isakov, Evgeny A.; Alexandrova, Zarya N.; Afanasiev, Valentin N.; Chernov, Vinetsy I.; Zhukov, Alexandr G.; Kutsenko, Viktor S.; Vysotskaya, Galina M.; Ostrovlyanchik, Evgenia S.; Mironov, Evgeny I.; Vladimirov, Pavel S.; Alexeev, Alexei I.; Finkelshtein, Leonid I., deceased; Finkelshtein, Nina J., administrator; and Finkelshtein, Julia L., administrator, 4,455,284, Cl. 423-119.000.

Agfa-Gevaert Aktiengesellschaft: *See*—
Patzold, Walter; Verburg, Werner; and von Rintelen, Harald, 4,455,359, Cl. 430-10.000.

Agnes, Jennifer M.: *See*—
Maurice, Terrence J.; Murray, Edward D.; and Agnes, Jennifer M., 4,455,318, Cl. 426-104.000.

Ahlstrom, John K.; Bachman, Brett; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr; and Well, Douglas M., to Data General Corporation. Digital data processing system having addressing means for translating operands into descriptors identifying data, plural multilevel microcode control means, and ability to execute a plurality of internal language dialects. 4,455,604, Cl. 364-200.000.

Aichinger, Horst; and Kranberg, Heinz E., to Siemens Aktiengesellschaft. X-Ray diagnostic installation comprising means for the formation of a transparency signal. 4,455,669, Cl. 378-97.000.

Air Products and Chemicals, Inc.: *See*—
Vines, Harvey L.; Alvarez, Miguel R.; Rowles, Howard C.; and Woodward, Donald W., 4,455,158, Cl. 62-28.000.

Aisin Seiki Company, Ltd.: *See*—
Toyoda, Minoru, 4,454,737, Cl. 70-456.00R.

Aisin Seiki Kabushiki Kaisha: *See*—
Sakakibara, Naoji; and Nomura, Isshi, 4,454,718, Cl. 60-600.000.
Umebayashi, Kazuyuki, 4,455,454, Cl. 179-2.00E.

Aizawa, Hidetoshi: *See*—
Tamura, Kaoru; and Aizawa, Hidetoshi, 4,455,599, Cl. 363-138.000.

Akashi, Goro; and Shirahata, Ryuji, to Fuji Photo Film Co., Ltd. Vacuum evaporating apparatus utilizing multiple rotatable cans. 4,454,836, Cl. 118-718.000.

Akatsuka, Takao: *See*—
Uchida, Shigekatsu; Akatsuka, Takao; and Kawamura, Takahide, 4,454,843, Cl. 123-179.00B.

Akazawa, Shigeaki: *See*—
Okazaki, Yoichiro; and Akazawa, Shigeaki, 4,454,644, Cl. 29-440.000.

Akins, Herbert G., to International Harvester Co. Air intake on a tractor engine hood. 4,454,926, Cl. 180-68.100.

Akira, Jingu, to Tokumi Denshi Kogyo Kabushiki Kaisha. Adjuster means for headset. 4,455,457, Cl. 179-156.00R.

Akiyama, Osamu: *See*—
Ichikawa, Tetsuo; Akiyama, Osamu; Hira, Rikuo; and Nishimura, Takashi, 4,455,097, Cl. 356-323.000.

Akiyama, Toshiyuki: *See*—
Takahashi, Kenji; Nagahara, Shusaku; Izumita, Morishi; Sato, Kazuhiro; Akiyama, Toshiyuki; and Ozawa, Naoki, 4,455,569, Cl. 358-51.000.

Akzo N.V.: *See*—
Duncker, Michiel J.; and Kreetz, Johan R., 4,454,864, Cl. 126-433.000.
Harteman, Evert, 4,455,341, Cl. 428-225.000.

Al-Tabaqchall, Manhal; Wesch, Ludwig; and Weiss, Edgar. Flame protection composition comprising aluminum trihydrate organic binder, and a sulfur compound and a polyurethane foam provided with such flame-protection composition. 4,455,396, Cl. 521-54.000.

Alco Foodservice Equipment Company: *See*—
Wolf, Fred G.; and Schneider, William C., 4,454,803, Cl. 99-329.0RT.

Alderborn, Jan; and Larker, Hans, to ASEA AB. Method of manufacturing bodies of silicon nitride. 4,455,275, Cl. 264-325.000.

Aldinger, Fritz; Heinke, Harry; Schreiber, Franz; and Werdecker, Waltraud, to W. C. Heraeus GmbH. Process of producing corrosion-resistant tubular connection pieces. 4,454,977, Cl. 228-131.000.

Alexander, John H., to ITT Industries, Inc. Multilayer ceramic dielectric capacitors. 4,455,590, Cl. 361-306.000.

Alexandrova, Zarya N.: *See*—
Sizyakov, Viktor M.; Kaluzhsky, Nikolai A.; Badaiants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Isakov, Evgeny A.; Alexandrova, Zarya N.; Afanasiev, Valentin N.; Chernov, Vinetsy I.; Zhukov, Alexandr G.; Kutsenko, Viktor S.; Vysotskaya, Galina M.; Ostrovlyanchik, Evgenia S.; Mironov, Evgeny I.; Vladimirov, Pavel S.; Alexeev, Alexei I.; Finkelshtein, Leonid I., deceased; Finkelshtein, Nina J., administrator; and Finkelshtein, Julia L., administrator, 4,455,284, Cl. 423-119.000.

Alexeev, Alexei I.: *See*—
Sizyakov, Viktor M.; Kaluzhsky, Nikolai A.; Badaiants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Isakov, Evgeny A.; Alexandrova, Zarya N.; Afanasiev, Valentin N.; Chernov, Vinetsy I.; Zhukov, Alexandr G.; Kutsenko, Viktor S.; Vysotskaya, Galina M.; Ostrovlyanchik, Evgenia S.; Mironov, Evgeny I.; Vladimirov, Pavel S.; Alexeev, Alexei I.; Finkelshtein, Leonid I., deceased; Finkelshtein, Nina J., administrator; and Finkelshtein, Julia L., administrator, 4,455,284, Cl. 423-119.000.

Alfred Honsel Nicten- und Metallwarenfabrik GmbH & Co.: *See*—
Schwab, Manfred F., 4,454,746, Cl. 72-391.000.

Alger, Richard N.; and Hall, John A., to Champion International Corporation. Hydraulic sheet stacking and weighing system. 4,455,115, Cl. 414-21.000.

Allemand, Charly D.; and Brewer, David L., to Hamamatsu Systems Inc. Monochromatic imaging apparatus. 4,455,067, Cl. 356-333.000.

Allen-Bradley Company: *See*—
Pelley, Michael S.; Rohn, David R.; Komarek, Lawrence A.; and Grudowski, Raymond A., 4,455,621, Cl. 364-900.000.

Allied Corporation: *See*—
Degginger, Edward R., 4,455,404, Cl. 524-439.000.
Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., 4,455,273, Cl. 264-184.000.
Ozenrider, Bryce C.; and Price, Alson K., 4,455,349, Cl. 428-395.000.
Vanderkooi, Nicholas, Jr.; Stevenson, Philip E.; and Welgos, Robert J., 4,455,417, Cl. 528-272.000.
Windeler, Christopher L.; DeVore, Henry S.; Seal, David B.; and Budzyn, Boleslaw L., 4,454,996, Cl. 242-25.00R.
Zudkevitch, David; Preston, David K.; and Belsky, Stephen E., 4,455,198, Cl. 203-19.000.

Allis-Chalmers Corp.: *See*—
Wooldridge, James E.; and Westlin, Karl L., 4,455,155, Cl. 55-13.000.

Alps Electric Co., Ltd.: *See*—
Fujisawa, Kyuichi; and Shibata, Mineo, 4,455,559, Cl. 346-139.00R.
Furusho, Hidetaka, 4,455,516, Cl. 318-254.000.
Kamijo, Yoshimi; and Kawachi, Kazuhiko, 4,455,324, Cl. 427-66.000.
Oyama, Akira, 4,455,458, Cl. 200-1.00B.

Alston, George K. Sprinkling hoses. 4,454,989, Cl. 239-269.000.

Aluminum Company of America: *See—*
Flowers, Leonard J., 4,454,907, Cl. 164-425.000.
Pridgen, Robert L., 4,454,774, Cl. 73-863.810.
Ray, Siba P.; and Rapp, Robert A., 4,455,211, Cl. 204-293.000.
Willis, W. Coy, 4,454,954, Cl. 215-21.000.

Alvarez, Miguel R.: *See—*
Vines, Harvey L.; Alvarez, Miguel R.; Rowles, Howard C.; and Woodward, Donald W., 4,455,158, Cl. 62-28.000.

Alza Corporation: *See—*
Martins, Agusto B.; and Amkraut, Alfred A., 4,455,142, Cl. 604-890.000.
Michaels, Alan S., 4,455,144, Cl. 604-892.000.
Theeuwes, Felix; Barclay, Brian; and Cortese, Richard, 4,455,143, Cl. 604-890.000.
Theeuwes, Felix, 4,455,145, Cl. 604-892.000.

Amano, Takehisa, to Nippon Gakki Seizo Kabushiki Kaisha. Automatic music performing apparatus with intermediate span designating faculty. 4,454,797, Cl. 84-1.030.

AMBAC Industries, Incorporated: *See—*
Stewart, Kenneth W., Sr., 4,455,511, Cl. 318-9.000.

AMCA International Corporation: *See—*
Schneider, Joseph J.; and Kancic, Robert A., 4,454,978, Cl. 228-151.000.

Amelot, Bernard: *See—*
de la Fuente, Carlos; and Amelot, Bernard, 4,454,633, Cl. 24-115.00R.

American Cast Iron Pipe Company: *See—*
Snow, William E., 4,455,329, Cl. 427-234.000.

American Cyanamid Company: *See—*
Dundon, John P.; and Klingsberg, Erwin, 4,455,435, Cl. 549-309.000.
Frazier, Charles, 4,455,250, Cl. 252-106.000.

American Eyelet Co., Inc.: *See—*
Theiler, Werner C., 4,455,059, Cl. 339-224.000.

American Hoist & Derrick Company: *See—*
McGhie, James R., 4,454,952, Cl. 212-189.000.

American Hospital Supply Corporation: *See—*
Matter, William L., 4,455,317, Cl. 424-309.000.

American Microsystems, Inc.: *See—*
Shiota, Philip, 4,455,568, Cl. 357-54.000.

Amfit, Inc.: *See—*
Curchod, Donald B., 4,454,618, Cl. 12-1.00R.

Amick, David R.; Melamed, Sidney; and Novak, Ronald W., to Rohm and Haas Company. (Meth)acrylate film-forming polymers prepared with an in process coalescent. 4,455,402, Cl. 524-295.000.

Amkraut, Alfred A.: *See—*
Martins, Agusto B.; and Amkraut, Alfred A., 4,455,142, Cl. 604-890.000.

AMP Incorporated: *See—*
Bunnell, Edward D., 4,455,460, Cl. 200-6.00A.
Harner, Donald R.; Kaley, Robert C.; and Crawford, Christopher L., 4,455,058, Cl. 339-99.00R.
Herrmann, Henry O., Jr.; and Ney, Reuben E., 4,455,056, Cl. 339-91.00R.

Anders, Walter G., to Diebold, Incorporated. Enclosure construction for remote banking pneumatic tube systems. 4,455,112, Cl. 406-110.000.

Anderson, Perry W.: *See—*
Glabe, Elmer F.; Anderson, Perry W.; and Laftsidis, Stergios, 4,455,321, Cl. 426-549.000.

Andre, Gerard, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Automatic device for compensation of AC polyphase power line voltage variations in AC-DC converters. 4,455,598, Cl. 363-87.000.

Andreas Stihl, Firma: *See—*
Gerhardy, Reinhard, 4,455,266, Cl. 261-35.000.

Andrews, Paul L.: *See—*
Morrow, Jerry D.; and Andrews, Paul L., 4,455,239, Cl. 210-802.000.

Angers, Leilani: *See—*
Pohl, Christopher A.; Slingsby, Rosanne W.; Johnson, Edward L.; and Angers, Leilani, 4,455,233, Cl. 210-635.000.

Angevine, Philip J.; Carroll, Michael B.; Shih, Stuart S.; and Tabak, Samuel A., to Mobil Oil Corporation. Polarity gradient extraction method. 4,455,216, Cl. 208-11.0LE.

Anver: *See—*
Bichet, Lucien, 4,454,619, Cl. 12-54.200.

Aoki, Kozo: *See—*
Seoka, Yoshio; and Aoki, Kozo, 4,455,367, Cl. 430-505.000.

Aoki, Naohisa; and Matui, Akira, to Nippon Columbia Company, Ltd. Moving coil type pickup cartridge. 4,455,639, Cl. 369-147.000.

Aoshima, Terutaka: *See—*
Matsumoto, Yukio; Aoshima, Terutaka; and Matsuo, Katsuharu, 4,455,480, Cl. 219-497.000.

Applied Polymer Technology, Inc.: *See—*
Hinrichs, Richard J.; and Thuen, Judy M., 4,455,268, Cl. 264-23.000.

Arbabian, Morteza. Waste water heat recovery apparatus. 4,454,911, Cl. 165-104.190.

ARI Technologies, Inc.: *See—*
Primack, Harold S.; Reedy, Dom E.; and Kin, Frederick R., 4,455,287, Cl. 423-573.00R.

Arimoto, Kunio: *See—*
Satake, Takeo; Ishigami, Masahisa; Arimoto, Kunio; Matsuba, Yorishige; Inoue, Yoshikazu; Tanaka, Yusuke; and Kanda, Kohei, 4,455,149, Cl. 44-51.000.

Ariyama, Kenzo: *See—*
Handa, Ryoji; Hosoda, Jun; Ariyama, Kenzo; Okushima, Osamu; and Kurashige, Nobuo, 4,455,411, Cl. 526-208.000.

Arkoff, Simon Z.: *See—*
Greco, Norman A.; and Arkoff, Simon Z., 4,455,507, Cl. 315-3.500.

Armatron International, Inc.: *See—*
Chuang, Alan, 4,454,677, Cl. 43-112.000.

Armtec Industries, Inc.: *See—*
Wendt, Roger A., 4,455,487, Cl. 250-339.000.

Arnold, Dieter; Bartels, Jorg; Lenzmann, Heinrich; Jacobsen, Gunter; Wendt, Heinz; and Stoltenberg, Manfred, to Hoechst Aktiengesellschaft. Process for the preparation of ketene. 4,455,439, Cl. 568-302.000.

Arnold, Orlan M., to First Taxing District, Water Department of the City of Norwalk, Connecticut. Conductance probe for detection of immiscible liquids. 4,455,531, Cl. 324-448.000.

Arnold, Winfried; and Vlemmings, Jan, to Robert Bosch GmbH. Agricultural tractor-trailer slippage recognition system and method. 4,454,919, Cl. 172-1.000.

Arons, Irving J.: *See—*
Tschirch, Richard P.; Sidman, Kenneth R.; and Arons, Irving J., 4,454,611, Cl. 2-161.00R.

Arrigoni, John P., to United Technologies Corporation. Minimum chord gauge. 4,454,656, Cl. 33-174.00C.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Kazama, Ken; Muramoto, Ikuo; Kusunoki, Yoshinobu; Ozaki, Kenji; and Fujii, Hideyuki, 4,455,259, Cl. 260-397.250.

Asami, Seiichi: *See—*
Ogawa, Yutaka; and Asami, Seiichi, 4,455,336, Cl. 428-116.000.

Asano, Masaharu: *See—*
Yoshida, Kenichi; Asano, Masaharu; and Yoneda, Kenji, 4,454,750, Cl. 73-35.000.

ASEA AB: *See—*
Alderborn, Jan; and Larker, Hans, 4,455,275, Cl. 264-325.000.

Ashina, Masato: *See—*
Morimoto, Kenji; and Ashina, Masato, 4,455,225, Cl. 209-588.000.

Ashmore, James M. Vapor injection fuel composition. 4,455,151, Cl. 44-53.000.

AT&T Bell Laboratories: *See—*
Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; Zuber, John R.; and Zydzik, George J., 4,455,351, Cl. 428-450.000.

Atlantic Richfield Company: *See—*
Sweed, Norman H., 4,455,283, Cl. 423-53.000.

Atlas Sound Division of American Trading and Production Corp.: *See—*
Seebinger, Frederick L., 4,454,927, Cl. 181-152.000.

Ault, Robert L., to Epic Metals Corporation. Metal deck raceway construction. 4,454,692, Cl. 52-221.000.

Automatic Toll Systems, Inc.: *See—*
Habeger, Donald, 4,455,465, Cl. 200-86.00R.

Automotive Products plc: *See—*
Nix, Richard; and Leigh-Monstevens, Keith V., 4,454,632, Cl. 24-16.0PB.

Avco Corporation: *See—*
Ben-Porat, Avi, 4,454,711, Cl. 60-39.320.
Jen, Hsianmin F., 4,455,121, Cl. 415-143.000.

Avery, Hazelton H.: *See—*
Jackson, Carroll V.; and Avery, Hazelton H., 4,455,111, Cl. 406-56.000.

Ayres, Paul S.; and Davis, Thomas L., to Babcock & Wilcox Company, The. Materials system for high strength corrosion resistant bimetallic products. 4,455,352, Cl. 428-485.000.

Ayyagari, Murthy S.; Schrank, Martin P.; and Coppola, Richard M., to GTE Products Corporation. Contrast enhanced electroluminescent device. 4,455,506, Cl. 313-506.000.

B. F. Goodrich Company, The: *See—*
Lee, Biing-Lin, 4,455,399, Cl. 523-351.000.
Son, Pyong N.; and Lai, John T., 4,455,401, Cl. 524-91.000.

Babcock-Hitachi Kabushiki Kaisha: *See—*
Ishida, Nobuyoshi; Kondo, Yoshihide; Konishi, Kunihiko; and Kamio, Hiroyuki, 4,455,281, Cl. 422-171.000.

Babcock & Wilcox Company, The: *See—*
Ayres, Paul S.; and Davis, Thomas L., 4,455,352, Cl. 428-485.000.
Dziubakowski, Donald J., 4,454,840, Cl. 122-390.000.

Bachman, Brett: *See—*
Ahlstrom, John K.; Bachman, Brett; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr; and Well, Douglas M., 4,455,604, Cl. 364-200.000.

Bachmann, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., to Coca-Cola Company, The. Vending machine display panel with utility module therein. 4,454,670, Cl. 40-584.000.

Badaiants, Khoren A.: *See—*
Sizyakov, Viktor M.; Kaluzhsky, Nikolai A.; Badaianta, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Isakov, Evgeny A.; Alexandrova, Zarya N.; Afanasiev, Valentin N.; Chernov, Vinetsy I.; Zhukov, Alexandr G.; Kutsenko, Viktor S.; Vysotskaya, Galina M.; Ostrovlyanchik, Evgenia S.; Mironov, Evgeny I.; Vladimirov, Pavel S.; Alexeev, Alexei I.; Finkelshtein, Leonid I., deceased; Finkelshtein, Nina J., administrator; and Finkelshtein, Julia L., administrator, 4,455,284, Cl. 423-119.000.

Baker, George J., to NCR Corporation. Flyback-forward boost switch-mode converter. 4,455,596, Cl. 363-21.000.

Baker, Joe L., to J. I. Case Company. Guide and support assembly for a window pane. 4,454,687, Cl. 49-419.000.

Baker, Robert G.: *See—*
Jameson, Calvin R.; and Baker, Robert G., 4,455,474, Cl. 219-301.000.
Balko, Edward N.: *See—*
Coker, Thomas G.; LaConti, Anthony B.; and Balko, Edward N., 4,455,210, Cl. 204-283.000.
Ball, Dean M.: *See—*
Webb, Paul A., Jr.; Small, Alan H.; and Ball, Dean M., 4,455,084, Cl. 356-72.000.
Bamberger, Wolfgang; and Wiedmann, Werner, to Werner & Pfleiderer. Process for regulating the mixing process of rubber mixtures in an internal mixer. 4,455,091, Cl. 366-76.000.
Banino, George M.: *See—*
LeGrand, Donald G.; and Banino, George M., 4,455,170, Cl. 106-97.000.
Banko, Michael D., Jr. Shield wall hanger. 4,454,905, Cl. 160-351.000.
Banno, Kazuo; Fujioka, Takafumi; Osaki, Masaaki; and Nakagawa, Kazuyuki, to Otsuka Pharmaceutical Co., Ltd. Carbostyril derivatives and pharmaceutical composition containing the same. 4,455,422, Cl. 544-363.000.
Barabanov, Igor V.: *See—*
Filippov, Vladimir I.; Parshin, Nikolai I.; Barabanov, Igor V.; Marmer, Eduard N.; Puzanov, Alexandr F.; Lobanov, Alexandr B.; Usaty, Jury P.; Gerasimov, Vladimir I.; Tikhonov, Arkady K.; and Turulin, Viktor N., 4,455,177, Cl. 148-155.000.
Baran, Paul, to Equatorial Communications Company. Satellite communications system and apparatus. 4,455,651, Cl. 370-104.000.
Barclay, Brian: *See—*
Theeuwes, Felix; Barclay, Brian; and Cortese, Richard, 4,455,143, Cl. 604-890.000.
Barge, Jean, to Aciers et Outillage Peugeot. Electric control device for actuating means. 4,454,776, Cl. 74-2.000.
Barkdull, Howard L., Jr. Span construction. 4,454,620, Cl. 14-20.000.
Barker, Andrew J.: *See—*
West, Robert N.; and Barker, Andrew J., 4,455,086, Cl. 356-237.000.
Barkova, Irina S.: *See—*
Portnyagina, Vera A.; Karp, Valentina K.; Barkova, Irina S.; Trinus, Fedor P.; Mokhort, Nikolai A.; Fadeicheva, Alexandra G.; Kozhushko, Galina I.; Ryabukha, Tatyana K.; Panteleimonov, Alexandr G.; Kljushin, Viktor V.; Dobrovolsky, Jury N.; Kirichek, Larisa M.; Medvedovsky, Adolf A.; Getman, Galina A.; Usenko, Jury D.; Sidelnikov, Viktor M.; Danilevsky, Nikolai F.; and Solsky, Yakov P., 4,455,312, Cl. 424-251.000.
Baroi, Stefan I.; and Duchenet, Bernard, to Baroi, Stefan Ionel. System for assembling and fixing panels. 4,455,102, Cl. 403-173.000.
Baroi, Stefan Ionel: *See—*
Baroi, Stefan I.; and Duchenet, Bernard, 4,455,102, Cl. 403-173.000.
Barr, William A. King pin for tractor trailer fifth wheel coupling. 4,455,036, Cl. 280-432.000.
Barrett, James H., Jr.; and Schultz, Carl. Automatic battery water filler. 4,454,896, Cl. 141-209.000.
Barrett, James H., Jr. Bellows boot for secondary battery terminals. 4,455,356, Cl. 429-66.000.
Barrois, Claus D.; and Dieterich, Philipp A., to Koenig & Bauer Aktiengesellschaft. Inking unit. 4,454,813, Cl. 101-349.000.
Barsotti, Robert J., to Du Pont de Nemours, E. I., and Company. Coating composition containing a rheology control additive of silica and polyvinyl pyrrolidone. 4,455,331, Cl. 428-446.000.
Bartels, Jorg: *See—*
Arnold, Dieter; Bartels, Jorg; Lenzmann, Heinrich; Jacobsen, Gunter; Wendt, Heinz; and Stoltenberg, Manfred, 4,455,439, Cl. 568-302.000.
Bartelsman, Bart W.; and Fost, Dennis L., to Du Pont de Nemours, E. I., and Company. Transferring separated components in gel electrophoresis via nylon membrane. 4,455,370, Cl. 435-6.000.
Bartlett, Allen J.; and Lewis, Robert M., to Helix Technology Corporation. Cryopump. 4,454,722, Cl. 62-55.500.
BASF Aktiengesellschaft: *See—*
Horner, Michael; Irgang, Matthias; and Nissen, Axel, 4,455,442, Cl. 568-875.000.
Jaggard, James F. R.; Schweier, Guenther; and Klaerner, Peter, 4,455,405, Cl. 525-53.000.
Schwendemann, Volker; and Koenig, Karl-Heinz, 4,455,260, Cl. 260-453.00P.
Wienand, Henning; Ostertag, Werner; and Bittler, Knut, 4,455,174, Cl. 156-288.00B.
BASF Wyandotte Corporation: *See—*
Reichel, Curtis J.; Narayan, Thirumurti; and Patton, John T., Jr., 4,455,397, Cl. 521-166.000.
Baski, Henry A. Packer apparatus. 4,455,027, Cl. 277-34.600.
Bassi, Alberto, to ITW Pastex Italia S.p.A. Seats with a device for locking the inclination of the seat back. 4,455,048, Cl. 297-367.000.
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Koehmstedt, Paul L., 4,455,186, Cl. 156-273.900.
Bauer, Sebastian. Pocket-sized check writing device with check form. 4,455,100, Cl. 400-88.000.
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Grode, Gerald A., 4,455,299, Cl. 424-101.000.
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Diehr, Hans-Joachim; and Priesnitz, Uwe, 4,455,428, Cl. 548-187.000.
Findeisen, Kurt; and Kranz, Eckart, 4,455,264, Cl. 260-545.00R.
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Ritter, Helmut; Paulus, Wilfried; Kuhle, Engelbert; and Genth, Hermann, 4,455,309, Cl. 424-250.000.
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Rohl, Ekkehard, 4,455,463, Cl. 200-61.850.
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Nilsson, Karl E., 4,455,000, Cl. 242-107.40A.
BBC Brown, Boveri & Company, Ltd.: *See—*
Buhler, Karl, 4,455,660, Cl. 373-71.000.
Hurlimann, Reinhard; and Zaugg, Paul, 4,454,721, Cl. 60-659.000.
Stucki, Samuel, 4,455,203, Cl. 204-84.000.
Beck, Peter M., to United States of America, Army. Reprogrammable electronic fuze. 4,454,815, Cl. 102-206.000.
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Kampf, Richard S.; Sohn, Chul H.; and Khan, Aurangzeb K., 4,454,939, Cl. 198-341.000.
Neti, Radhakrishna M.; and Sawa, Kenneth B., 4,455,213, Cl. 204-415.000.
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Burton, George; and Best, Desmond J., 4,455,314, Cl. 424-271.000.
Beeston Company Limited: *See—*
Horvath, Stephen, 4,454,850, Cl. 123-537.000.
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Bell, Malcolm C.: *See—*
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Lewis, Donald J., 4,454,990, Cl. 239-585.000.
Benedick, Edward H., to Regenerative Environmental Equipment Co., Inc. Vertical flow incinerator having regenerative heat exchange. 4,454,826, Cl. 110-211.000.
Bennett, George, to International Shoe Machine Corporation. Sewing machine presser foot having changeable zone of reciprocation. 4,454,830, Cl. 112-239.000.
Benno, Edward L. Packaging method. 4,454,705, Cl. 53-399.000.
Berbeco, George R., to Charleswater Products, Inc. Conductive laminate sheet material and method of preparation. 4,455,350, Cl. 428-322.200.
Bergault, Anne-Marie; Bonavent, Gerard, deceased (by Bonavent, Marie-Joseph, legal representative); Jarrin, Jacques; and Mollard, Marc, to Institut Francais du Petrole. High- and medium-density extrudable and crosslinkable polyethylene compositions. 4,455,406, Cl. 525-194.000.
Berger, Harald: *See—*
Fischer, Gerhard; and Berger, Harald, 4,455,013, Cl. 254-267.000.
Bergmann, Walter: *See—*
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Bianchetto, Peter E.; and Frobock, John H., to Butler Automatic Inc. Web splicer. 4,455,190, Cl. 156-504.000.
Bichet, Lucien, to Anver. Glue press for making ankle boots. 4,454,619, Cl. 12-54.200.
Bidwell, John L.: *See*—
Walden, Jack M.; Eads, William D.; Cozzens, Ray J.; Bidwell, John L.; Jewett, Robert A.; Wilson, Martin S.; Griffin, Daniel J.; Kuseski, Robert E.; and Schulte, Louis T., 4,455,618, Cl. 364-900.000.
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Biggs, Gordon R., to C.E.M. Co., Inc. Thermal presses. 4,455,134, Cl. 425-508.000.
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Billard, Alain A. A.; Calmettes, Hubert C. G.; and Escoyaud, Roland C., to Societe E. Lacroix-Tous Artifices. Cartridge having a pyrotechnical actuation of a payload with a safety device. 4,454,816, Cl. 102-430.000.
Bindra, Jasjit S.; Eggler, James F.; Johnson, Michael R.; and Schaaf, Thomas K., to Pfizer Inc. 11-Desoxy-16-aryloxy-ω-tetranorprostaglandins. 4,455,421, Cl. 548-252.000.
Binz, Reiner; Knorpp, Eberhard; and von Sichart, Frithjof, to Siemens Aktiengesellschaft. Time division multiplex switching network unit. 4,455,648, Cl. 370-66.000.
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Welebir, Andrew J., 4,455,162, Cl. 71-80.000.
Bionet, Inc.: *See*—
McDaniel, John M.; and Noblitt, Niles L., 4,454,612, Cl. 3-1.913.
Birkeland, Stephen P., to Minnesota Mining & Manufacturing Company. Film supply cassette for camera processor. 4,455,076, Cl. 354-275.000.
Birkle, Siegfried; Stoger, Klaus; and De Vries, Hans, to Siemens Aktiengesellschaft. Bath and method for anodizing aluminized parts. 4,455,201, Cl. 204-58.000.
Bitterly, Jack G. Vacuum chamber and method of creating a vacuum. 4,455,135, Cl. 432-1.000.
Bittler, Knut: *See*—
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Blasiole, George A., to United States of America, Energy. Heat exchanger for coal gasification process. 4,455,154, Cl. 48-77.000.
Bleiker, Werner. System for measuring the heat energy emission of room heating elements. 4,455,095, Cl. 374-39.000.
Bloodworth, William T., to Scully, Richard L., a part interest. Pulse code modulated digital automatic exchange. 4,455,646, Cl. 370-66.000.
Bloomquist, Gerald E., to Bloomquist, Patricia. Cutter head for a material cutting machine. 4,454,995, Cl. 241-277.000.
Bloomquist, Patricia: *See*—
Bloomquist, Gerald E., 4,454,995, Cl. 241-277.000.
Blosser, Stephen T.: *See*—
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Bertoni, John M., 4,455,292, Cl. 424-5.000.
Hansen, Eric J.; Kettman, John R.; and Robertson, Stella M., 4,455,296, Cl. 424-87.000.
Bobry, Howard H., to Lortec Power Systems, Inc. Single phase, double-ended thyristor inverter with choke-coupled impulse commutation. 4,455,600, Cl. 363-139.000.
Bockstruck, Herman N., to Olin Corporation. Shotshell chamber. 4,454,674, Cl. 42-76.00R.
Bockstruck, Herman N., to Olin Corporation. Belted shotshell. 4,454,817, Cl. 102-469.000.
Boegl, Manfred: *See*—
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Bonilla-Lugo, Juan; and Rodriguez-Molinary, Felix A. Building construction and method of constructing same. 4,454,702, Cl. 52-745.000.
Born, Ellis H.; Meisel, William H.; and Wolfe, Paul B., to Abex Corporation. Automatic pressure setting adjustment for a pressure compensated pump. 4,455,124, Cl. 417-218.000.
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Kasper, James J.; Bosch, George E.; and Smith, Craig A., 4,455,659, Cl. 373-39.000.
Bose, Amar G.; and Carter, John, to Bose Corporation. Headphoning. 4,455,675, Cl. 381-74.000.
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Bostwick Steel Lath Company, The: *See*—
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Bourbonnaud, Marc; and Thelinge, Jean, to Sarl Inotec. Device for economically preheating fuel by recovering energy from the fuel itself. 4,454,851, Cl. 123-557.000.
Boutin, Jean; and Neel, Jean, to Rhone-Poulenc Industries. Scale inhibition method employing (meth)acrylic acid/methallylsulfonate copolymer. 4,455,235, Cl. 210-701.000.
Bowen, Brenda R.; and Griffin, Gaylon D. Timer mechanism for rental equipment. 4,455,093, Cl. 368-10.000.
Boyden, James H.; Bradbury, Donald R.; Garrettson, Garrett A.; Groves, Timothy R.; Hanlon, Lawrence R.; and Neukermans, Armand P., to Hewlett-Packard Company. Electron beam driven ink jet printer. 4,455,561, Cl. 346-140.00R.
Bozotti, Carlo: *See*—
Murari, Bruno; Storti, Sandro; Morelli, Marco; and Bozotti, Carlo, 4,455,585, Cl. 361-18.000.
Braat, Josephus J. M., to U.S. Philips Corporation. Apparatus for optically reading a record carrier with two types of information areas. 4,455,632, Cl. 369-45.000.
Brabbs, William J.: *See*—
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Boyden, James H.; Bradbury, Donald R.; Garrettson, Garrett A.; Groves, Timothy R.; Hanlon, Lawrence R.; and Neukermans, Armand P., 4,455,561, Cl. 346-140.00R.
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Brancaz, Jean; and Marizy, Georges, to Ugine Aciers. Nozzle for an oxygen injection lance for decarburization of pig iron and use for the decarburization of chromium containing pig iron. 4,455,166, Cl. 75-60.000.
Brandon, David E.: *See*—
Symonds, Dean H.; and Brandon, David E., 4,455,555, Cl. 340-870.310.
Brandstedt, Bjorn S., to Brandstedt Controls Corporation. Temperature and operating mode digital display having direct and mirror image viewing capability. 4,455,096, Cl. 374-170.000.
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Bratt, Richard G.; Katz, Lawrence H.; and Wells, Douglas M., to Data General Corporation. System for resolving pointers in a digital data processing system. 4,455,603, Cl. 364-200.000.
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Bremer, Noel J.: *See*—
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Brenholdt, Irving R., to St. Regis Paper Company. Apparatus and method for monitoring and controlling a disc refiner gap. 4,454,991, Cl. 241-30.000.
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Takasuga, Yutaka, 4,455,189, Cl. 156-502.000.
British Gas Corporation: *See*—
Kitchener, Ivor J., 4,455,391, Cl. 502-315.000.
Brode, David A., to Crompton and Knowles Corporation. Disazo sulfophenylpyrazolone-sulfostilbene dyes. 4,455,258, Cl. 260-160.000.

Broekhuis, Antonius A., to Shell Oil Company. Process for upgrading hydrocarbon streams comprising conjugated diolefins. 4,455,447, Cl. 585-853.000.

Brois, Stanley J.: *See*—
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Brotherston, Colin P., to Lucas Industries plc. Fuel pumping apparatus. 4,455,126, Cl. 417-252.000.

Brouhard, Ronald R. Toe protector for an orthopedic food cast. 4,454,872, Cl. 128-82.000.

Brown, Clifford G.: *See*—
Markham, David; Brown, Clifford G.; and Simon, John M., 4,455,234, Cl. 210-638.000.

Brown, Donald P.; Jones, Ian R.; and Vurpillat, Victor V. Solar heat collecting panel assembly and method for covering structures. 4,454,863, Cl. 126-432.000.

Brown, Karl L., to Varian Associates, Inc. Quadrupole singlet focusing for achromatic parallel-to-parallel devices. 4,455,489, Cl. 250-398.000.

Brown, Robert G.: *See*—
Girgis, Adly A.; and Brown, Robert G., 4,455,612, Cl. 364-483.000.

Brownawell, Darrel W.: *See*—
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Brownell, George L.; Collier, Melba; Hall, William E.; Morgan, Howard H., Jr.; and Snyder, Arthur R., to United States Steel Corporation. Method of removal of COS from propylene. 4,455,446, Cl. 585-850.000.

Broze, Guy; and Laitem, Leopold, to Colgate-Palmolive Company. Stabilized bleach and laundering composition. 4,455,249, Cl. 252-95.000.

Bruce, Lars M., to Uddeholms Aktiebolag. Method of producing an article and article produced in a mould which defines the contour of the article. 4,455,353, Cl. 428-553.000.

Brunn, Hansjoachim, to Intertractor Viehmann GmbH & Co., Firma. Master link for track chain. 4,455,054, Cl. 305-58.00R.

Brunner, Paul J.; Christopher, Charles A.; and Pindell, Robert G., to Texaco Inc. Method for sampling a fluid from a well. 4,454,772, Cl. 73-863.310.

Brunner, Paul J.; Christopher, Charles A.; and Pindell, Robert G., to Texaco Inc. Time interval automatic well multi-phase fluid sampler. 4,454,773, Cl. 73-863.310.

Bruot, Eric F.: *See*—
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Bryce, Rodney H.: *See*—
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Buckley, James A.: *See*—
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Budd Company, The: *See*—
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Buder, Wolfgang: *See*—
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Budich, Wolfgang; Gasper, Bertram; Kurth, Josef; Scharf, Karl-Gunter; and Wissinger, Waldemar, to Dynamit Nobel Aktiengesellschaft. Glass fiber reinforced polyvinyl composition. 4,455,398, Cl. 523-220.000.

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Budzynski, Andrei Z.: *See*—
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Bueler, Richard C., to Echlin Inc. Tractor air brake system and control valve means therefor. 4,455,052, Cl. 303-6.00C.

Buhler, Karl, to BBC Brown, Boveri & Company, Ltd. Inclined arrangement of the support surfaces of a furnace body and furnace lid for electric arc furnaces. 4,455,660, Cl. 373-71.000.

Bulso, Joseph D., Jr.; and Doyle, Stephen D., to Redicon Corporation. Integrated container manufacturing system and method. 4,454,743, Cl. 72-349.000.

Bunnell, Edward D., to AMP Incorporated. Joystick switch. 4,455,460, Cl. 200-6.00A.

Burke, Timothy M., to Motorola Inc. Carrier data operated squelch. 4,455,664, Cl. 375-104.000.

Burkland, Charles W.; and Noe, William J., to Maytag Company, The. Combined appliance with unifying support structure. 4,454,732, Cl. 68-3.00R.

Burnett, Dorothy K. Call system and methods and apparatus for operating same. 4,455,548, Cl. 340-293.000.

Burns, Daniel L.: *See*—
Foster, Danny S.; and Burns, Daniel L., 4,455,009, Cl. 248-561.000.

Burns & McDonnell Engineering Company, Inc.: *See*—
Morrow, Jerry D.; and Andrews, Paul L., 4,455,239, Cl. 210-802.000.

Burris, Wesley E. Extending bar stake puller. 4,454,792, Cl. 81-463.000.

Burroughs Corporation: *See*—
Loskorn, Richard A.; Biehl, Philip D.; and Catiller, Robert D., 4,455,622, Cl. 364-900.000.

Burton, George; and Best, Desmond J., to Beecham Group p.l.c. Penicillin derivatives. 4,455,314, Cl. 424-271.000.

Burton, James, to General Hospital Corporation, The. Renin inhibitors. 4,455,303, Cl. 424-177.000.

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Bussemeier, Bernd; Frohning, Carl D.; Horn, Gerhardt; and Kluy, Werner, to Ruhrchemie Aktiengesellschaft. Process for the production of unsaturated hydro-carbons. 4,455,395, Cl. 518-717.000.

Buta, John R., to Paxson Machine Company, The. Roller leveler and method of operating same. 4,454,738, Cl. 72-21.000.

Butler Automatic Inc.: *See*—
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Butler, Robert. Resiliest support. 4,455,010, Cl. 248-576.000.

Byer, Robert L., to Leland Stanford Junior University, The Board of Trustees of the. Stable single axial mode Q switched laser oscillator with injection locking. 4,455,657, Cl. 372-18.000.

Byler, William H., to William H. Byler Revocable Trust. Arthritis relief support pad. 4,454,869, Cl. 128-69.000.

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Cailliau, Gerard M.; and Mathieu, Jean-Pol, to Poclain Hydraulics. Piston assembly for a fluid mechanism with reaction plate, complete with slipper block. 4,454,802, Cl. 92-158.000.

Calderon, Jose L.; and Layrisse, Ignacio, to Intevep. Process for upgrading heavy hydrocarbons employing a diluent. 4,455,221, Cl. 208-347.000.

Calgon Corporation: *See*—
Costello, Christine A., 4,455,240, Cl. 252-8.50C.

Calmar, Inc.: *See*—
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Calmettes, Hubert C. G.: *See*—
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Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; Zuber, John R.; and Zydzik, George J., to AT&T Bell Laboratories. Preparation of photodiodes. 4,455,351, Cl. 428-450.000.

Campbell, John R.: *See*—
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Gregory, Clifton; and Campbell, Lester W., 4,454,730, Cl. 66-149.00S.

Camras, Marvin, to IIT Research Institute. Self-correcting record-play system and method. 4,455,581, Cl. 360-31.000.

Camren, Virgil. Pump jack system for oil well. 4,454,778, Cl. 74-41.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Morrison, James D., 4,454,878, Cl. 128-201.270.

Canadian Co-Operative Implements Limited: *See*—
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Cann, Peter L., to Carrier Corporation. Method and apparatus for integrating a supplemental heat source with staged compressors in a heat pump. 4,454,725, Cl. 62-117.000.

Canon Kabushiki Kaisha: *See*—
Fujino, Masahisa; Sunouchi, Akio; Konno, Tatsuo; and Suzuki, Ryuji, 4,455,072, Cl. 354-153.000.
Hashimoto, Seiji; and Tanaka, Nobuyoshi, 4,455,574, Cl. 358-213.000.
Iwashita, Tomonori; Watanabe, Yoshitaka; and Fukahori, Hidehiko, 4,455,075, Cl. 354-173.100.
Kato, Masatake; and Tsunekawa, Tokuichi, 4,455,071, Cl. 354-431.000.
Kawamura, Masaharu, 4,455,069, Cl. 354-434.000.
Kenan, Richard P., 4,455,064, Cl. 350-96.130.
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Ogawa, Masahiko, 4,455,070, Cl. 354-403.000.
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Yoshimura, Shigeru; and Shimizu, Katsuichi, 4,455,081, Cl. 355-14.0SH.

Capler, William H., Jr.; and Cordts, Melvin J. Independent suspension for light trailers. 4,455,038, Cl. 280-701.000.

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Weisbach, Albert P., 4,455,104, Cl. 404-50.000.

Cargioli, Joseph D.: *See*—
Lifshin, Eric; Cargioli, Joseph D.; Schroder, Stephen J.; and Wong, Joe, 4,455,181, Cl. 156-150.000.

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Pratt, Clyde R.; and Carignan, Roger G., 4,454,875, Cl. 128-92.00B.

Carlisle, George W., to King Engineering Corporation. Pressure sensing system. 4,454,760, Cl. 73-302.000.

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Bhaskar, Kasi S.; Carlson, Alden J.; Couper, Alastair N.; Lambert, Dennis L.; and Scott, Marshall H., 4,455,654, Cl. 371-20.000.

Carmel Energy, Inc.: *See*—
Poston, Robert S., 4,454,917, Cl. 166-303.000.

Carnation Company: *See*—
McCulloch, Michael G., 4,454,804, Cl. 99-348.000.

Carpenter, Arthur C. Apparatus for removing an animal from a shell. 4,454,629, Cl. 17-51.000.

Carr, Michael A. Drip preventer. 4,454,967, Cl. 222-213.000.

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Cann, Peter L., 4,454,725, Cl. 62-117.000.
Haas, Rudy E.; Smorol, Michael E.; Tobin, Curtis L.; and Walker, James J., Jr., 4,454,641, Cl. 29-157.30R.

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Miller, Allen W.; Carroll, Cornelius F.; and Abernathy, Lloyd E., 4,454,857, Cl. 124-87.000.
Carroll, Michael B.: *See*—
Angevine, Philip J.; Carroll, Michael B.; Shih, Stuart S.; and Tabak, Samuel A., 4,455,216, Cl. 208-11.0LE.
Carson, Gary A.: *See*—
Elgas, Roger J.; and Carson, Gary A., 4,455,230, Cl. 210-232.000.
Carter, John: *See*—
Bose, Amar G.; and Carter, John, 4,455,675, Cl. 381-74.000.
Carter, Joseph H. Device for clamping rails to ties. 4,454,985, Cl. 238-270.000.
Cartoceti, Italiano, to Cir S.p.A. Divisione Sasib. Apparatus for the emptying of cigarette trays into magazines. 4,455,117, Cl. 414-295.000.
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Fox, David H.; Kostan, Charles C.; and Casaceli, Frank B., 4,454,856, Cl. 123-617.000.
Case, Steven K., to University of Minnesota, The Regents of the. Multi-faceted holographic optical element and methods of making and using same. 4,455,061, Cl. 350-3.750.
Casio Computer Co., Ltd.: *See*—
Yanagawa, Mikio, 4,455,024, Cl. 273-85.00G.
Caspar, Roman: *See*—
Croteau, Denis; Caspar, Roman; Krishnan, Ramamurthy G.; Malashenko, Alexander; Bryce, Rodney H.; Soomet, Valdur; and Deperis, Giovanni, 4,455,197, Cl. 162-343.000.
Caterpillar Tractor Co.: *See*—
Muller, Thomas P.; and Wirt, Leon A., 4,454,715, Cl. 60-421.000.
Catiller, Robert D.: *See*—
Loskorn, Richard A.; Biehl, Philip D.; and Catiller, Robert D., 4,455,622, Cl. 364-900.000.
Caveney, Jack E.; and Moody, Roy A., to Panduit Corp. Method of fabricating a wire harness. 4,454,651, Cl. 29-861.000.
CCT Associates: *See*—
Cooke, Allister B., 4,454,974, Cl. 225-106.000.
CdF Chimie S.A.: *See*—
Belot, Jean, 4,455,423, Cl. 544-192.000.
Celanese Corporation: *See*—
Moates, Danny; and Chadwick, Michael L., 4,454,617, Cl. 8-151.000.
Cengel, John A.: *See*—
Smyser, Granville L.; and Cengel, John A., 4,455,244, Cl. 252-51.50R.
Chadshay, Roman, to Combustion Engineering, Inc. Atomizing oil valve improvement. 4,454,892, Cl. 137-597.000.
Chadwick, Dennis P.: *See*—
Becker, Heinz W.; Whitfield, Fred S.; and Chadwick, Dennis P., 4,455,033, Cl. 280-403.000.
Chadwick, Michael L.: *See*—
Moates, Danny; and Chadwick, Michael L., 4,454,617, Cl. 8-151.000.
Champion International Corporation: *See*—
Alger, Richard N.; and Hall, John A., 4,455,115, Cl. 414-21.000.
Kuehn, Scott L., 4,454,951, Cl. 212-89.000.
Thompson, Kenneth P., 4,455,184, Cl. 156-244.110.
Chandler Evans Inc.: *See*—
Meyer, Gene A.; and Peck, Robert E., 4,454,713, Cl. 60-39.281.
Zagranski, Raymond D.; and White, Albert H., 4,454,754, Cl. 73-117.300.
Charles, Jay R.: *See*—
Fox, James R.; Horwitz, Michael J.; and Charles, Jay R., 4,455,644, Cl. 370-13.000.
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Settineri, William J.; Charles, John G.; Hinkel, Jerald J.; and Malone, Bradley P., 4,455,175, Cl. 134-5.000.
Charleston, Jo Ann: *See*—
Jalan, Vinod; Reid, Margaret A.; and Charleston, Jo Ann, 4,454,649, Cl. 29-623.500.
Charleswater Products, Inc.: *See*—
Berbeco, George R., 4,455,350, Cl. 428-322.200.
Chatelle, Philippe P.: *See*—
Cuylits, Jacques; Lenssen, Paul; and Chatelle, Philippe P., 4,454,819, Cl. 104-245.000.
Chatterji, Jiten; and Brake, Bobby G., to Halliburton Company. Salt water cement slurries and water loss reducing additives therefor. 4,455,169, Cl. 106-93.000.
Chemicals, Inc.: *See*—
Takatsu, Haruyoshi; and Sato, Hisato, 4,455,443, Cl. 570-129.000.
Chemplex Company: *See*—
Lynch, Michael W.; and Pullukat, Thomas J., 4,455,386, Cl. 502-104.000.
Chen, Evan N., to Warner-Lambert Company. Barber-type razor. 4,454,653, Cl. 30-53.000.
Chernov, Vinetsy I.: *See*—
Sizyakov, Viktor M.; Kaluzhsky, Nikolai A.; Badaiants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Isakov, Evgeny A.; Alexandrova, Zarya N.; Afanasiev, Valentin N.; Chernov, Vinetsy I.; Zhukov, Alexandr G.; Kutsenko, Viktor S.; Vysotskaya, Galina M.; Ostrovlyanchik, Evgenia S.; Mironov, Evgeny I.; Vladimirov, Pavel S.; Alexeev, Alexei I.; Finkelshtein, Leonid I., deceased; Finkelshtein, Nina J., administrator; and Finkelshtein, Julia L., administrator, 4,455,284, Cl. 423-119.000.
Chevron Research Company: *See*—
Liston, Thomas V., 4,455,243, Cl. 252-49.600.
Reynolds, Bruce A., 4,455,217, Cl. 208-11.00R.
Chibata, Ichiro; Kisumi, Masahiko; Sugiura, Masaki; and Takagi, Tsutomu, to Tanabe Seiyaku Co., Ltd. Method for fermentative production of L-proline. 4,455,372, Cl. 435-107.000.
Chierici, Osvaldo F. Telescoping uncoupling lever. 4,454,953, Cl. 213-166.000.
Childers, Spencer L.; and Craven, Herman R., to Vendo Company, The. Package dispensing mechanism for vending machine. 4,454,961, Cl. 221-266.000.
Chiodoni, Ugo, to Unibios S.p.A. Process for the preparation of 1-(4-chloro-benzoyl)-5-methoxy-2-methyl-3-indolyl-acetohydroxamic acid. 4,455,432, Cl. 548-501.000.
Chivas Products Ltd.: *See*—
Smith, Robert J., 4,455,459, Cl. 200-5.00R.
Chiwaki, Ryuichi: *See*—
Watanabe, Masakatu; Hamada, Yukinori; and Chiwaki, Ryuichi, 4,455,620, Cl. 364-900.000.
Chiyoda, Tsutomu; Nakamura, Makoto; and Hasegawa, Shinichi, to Sumitomo Chemical Company, Limited. Method for producing 1,3,5-triisopropylbenzene trihydroperoxides. 4,455,440, Cl. 568-565.000.
Chocolate Photos: *See*—
Syrmis, Victor, 4,455,320, Cl. 426-383.000.
Christopher, Charles A.: *See*—
Brunner, Paul J.; Christopher, Charles A.; and Pindell, Robert G., 4,454,772, Cl. 73-863.310.
Brunner, Paul J.; Christopher, Charles A.; and Pindell, Robert G., 4,454,773, Cl. 73-863.310.
Chuang, Alan, to Armatron International, Inc. Housing for electrically energized killing assembly. 4,454,677, Cl. 43-112.000.
Chugai Ro Co., Ltd.: *See*—
Imose, Masayuki; Seno, Takao; and Sakaguchi, Yoshihito, 4,455,136, Cl. 432-59.000.
Ciba-Geigy Corporation: *See*—
Durr, Dieter; Rohr, Otto; and Bohner, Beat, 4,455,437, Cl. 560-21.000.
Gsell, Laurenz; and Gehret, Jean-Claude, 4,455,438, Cl. 564-253.000.
Meyer, Hans R.; and Siegrist, Max, 4,455,436, Cl. 549-467.000.
Ciccorelli, Raffaele, to HS Hydraulic Systems S.r.l. Ring rolling mill. 4,454,739, Cl. 72-23.000.
Cimera, Richard F.: *See*—
Krupick, Walter J.; Previte, Peter L.; and Cimera, Richard F., 4,454,777, Cl. 74-5.460.
Cir S.p.A. Divisione Sasib: *See*—
Cartoceti, Italiano, 4,455,117, Cl. 414-295.000.
Citizen Watch Company Limited: *See*—
Enomoto, Tadao, 4,455,199, Cl. 204-4.000.
Clark, Earl S., to Federal Products Corporation. Measurement system with remote display. 4,454,762, Cl. 73-432.00A.
Clark, Robert H., to Toastmaster, Inc. Method of effecting long wavelength radiation cooking. 4,455,319, Cl. 426-233.000.
Clark & Vicario Corporation: *See*—
Kaiser, Robert G., 4,455,224, Cl. 209-211.000.
Clements, Herbert A., to S. S. S. Patents Limited. Rotary high power transmission arrangement. 4,454,938, Cl. 192-67.00A.
Co-Steel International Limited: *See*—
Mulcahy, Joseph A., 4,454,909, Cl. 164-504.000.
Cobe Laboratories, Inc.: *See*—
Elgas, Roger J.; and Carson, Gary A., 4,455,230, Cl. 210-232.000.
Coca-Cola Company, The: *See*—
Bachmann, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., 4,454,670, Cl. 40-584.000.
Cochran, William T., to International Telephone and Telegraph Corporation. Digital supervisory circuit for a telephone system. 4,455,456, Cl. 179-18.0FA.
Coder, William N.: *See*—
Baxter, Ward, III; Coder, William N.; and Haeffele, Steven M., 4,455,602, Cl. 364-200.000.
Codex Corporation: *See*—
Qureshi, Shahid U. H., 4,455,661, Cl. 375-8.000.
Coe Manufacturing Company, The: *See*—
Hayes, Leonard L., 4,454,900, Cl. 144-213.000.
Cohen, Michael A.; and Eirich, Luther A., to O.M. Scott & Sons Company, The. Trace element fertilizer composition. 4,455,161, Cl. 71-24.000.
Coker, Thomas G.; LaConti, Anthony B.; and Balko, Edward N., to General Electric Company. Multi layer ion exchanging membrane with protected interior hydroxyl ion rejection layer. 4,455,210, Cl. 204-283.000.
Colgate-Palmolive Company: *See*—
Broze, Guy; and Laitem, Leopold, 4,455,249, Cl. 252-95.000.
Harvey, Kenneth; and Connors, Stephen T., 4,455,293, Cl. 424-52.000.
Harvey, Kenneth; and Connors, Stephen T., 4,455,294, Cl. 424-52.000.
Colglazier, Donald F.; Janssen, Donovan M.; Mantey, John P.; and Valent, James A. Document feeder electronic registration gate. 4,455,018, Cl. 271-227.000.
Collet-Cassart, Daniel: *See*—
Magnusson, Carl-Gustaf M.; Collet-Cassart, Daniel; and Masson, Pierre L., 4,455,381, Cl. 436-543.000.
Collier, Melba: *See*—
Brownell, George L.; Collier, Melba; Hall, William E.; Morgan, Howard H., Jr.; and Snyder, Arthur R., 4,455,246, Cl. 585-850.000.

Collins, Charles: *See—*
Riordan, William J.; and Collins, Charles, 4,455,589, Cl. 361-190.000.

Combustion Engineering, Inc.: *See—*
Chadshay, Roman, 4,454,892, Cl. 137-597.000.
Musto, Richard L., 4,454,825, Cl. 110-106.000.

Commissariat a l'Energie Atomique: *See—*
Jeuch, Pierre; and Parrens, Pierre, 4,455,193, Cl. 156-643.000.

Commonwealth Scientific and Industrial Research Organization: *See—*
Lewis, David M.; Brady, Peter R.; Cookson, Peter G.; and Fincher, Keith W., 4,455,147, Cl. 8-471.000.

Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Tallon, Jacques, 4,454,894, Cl. 137-599.000.

Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See—*
Andre, Gerard, 4,455,598, Cl. 363-87.000.

Compumotor Corporation: *See—*
Ward, Kenneth C.; and Welburn, Ross, 4,455,520, Cl. 318-696.000.

Connell, John L.: *See—*
Weinstein, Albert; Skeen, Michael A.; and Connell, John L., 4,454,757, Cl. 73-189.000.

Connors, Stephen T.: *See—*
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Harvey, Kenneth; and Connors, Stephen T., 4,455,294, Cl. 424-52.000.

Conoco Inc.: *See—*
Janssen, Harry R.; and Poffenbarger, Gary L., 4,455,219, Cl. 208-131.000.
Poe, R. L.; and Royer, D. J., 4,455,289, Cl. 423-630.000.

Conrad, Bernhard; Finkenzeller, Johann; Kuehn, Gerhard; and Lichtenberg, Wolfhart, to Siemens Aktiengesellschaft. Radiation detector. 4,455,488, Cl. 250-385.000.

Consolidation Coal Company: *See—*
Jamison, Will B.; and Pyles, Harley G., 4,454,922, Cl. 175-323.000.

Contreras, Joseph P., Sr. Compact with air tight closure. 4,454,889, Cl. 132-82.00R.

Cooke, Allister B., to CCT Associates. Paper towel regulator and dispenser. 4,454,974, Cl. 225-106.000.

Cookson, Peter G.: *See—*
Lewis, David M.; Brady, Peter R.; Cookson, Peter G.; and Fincher, Keith W., 4,455,147, Cl. 8-471.000.

Cooper Industries, Inc.: *See—*
Lindstedt, Ernst L.; and Hisey, Robert W., 4,455,116, Cl. 414-22.000.

Cooper Laboratories, Inc.: *See—*
Finnerty, Suja P.; and Hangos, Russell A., 4,455,377, Cl. 436-69.000.

Coppola, Richard M.: *See—*
Ayyagari, Murthy S.; Schrank, Martin P.; and Coppola, Richard M., 4,455,506, Cl. 313-506.000.

Cordis Corporation: *See—*
Gold, Philip, 4,454,888, Cl. 128-785.000.

Cordts, Melvin J.: *See—*
Capler, William H., Jr.; and Cordts, Melvin J., 4,455,038, Cl. 280-701.000.

Corkery, Leon J.: *See—*
Love, Mahlon L.; and Corkery, Leon J., 4,454,787, Cl. 74-781.00R.

Cormier, Roger L.; Dugan, Robert J.; Guyette, Richard R.; Wanish, Paul J.; and Zeitler, Carl, Jr., to International Business Machines Corporation. Method for establishing variable path group associations and affiliations between "non-static" MP systems and shared devices. 4,455,605, Cl. 364-200.000.

Corning Glass Works: *See—*
Hillman, Arthur E.; and Paisley, Robert J., 4,455,180, Cl. 156-89.000.
Rittler, Hermann L., 4,455,160, Cl. 65-30.130.
Wu, Shy-Hsien, 4,455,382, Cl. 501-2.000.

Cornwell, William J.; Dudley, Tex M.; and Lee, William H., to General Signal Corporation. System for linear motor control. 4,455,512, Cl. 318-135.000.

Cortese, Richard: *See—*
Theeuwes, Felix; Barclay, Brian; and Cortese, Richard, 4,455,143, Cl. 604-890.000.

Costello, Christine A., to Calgon Corporation. Ampholytic polymers for use as filtration control aids in drilling muds. 4,455,240, Cl. 252-8.50C.

Cotner, Ronald: *See—*
Muto, Rudolph; and Cotner, Ronald, 4,454,880, Cl. 128-205.250.

Coulange, Jean, to e.d. Veglia. Liquid level detector adapted in particular to determine the level of fuel in a vehicle fuel tank. 4,454,761, Cl. 73-308.000.

Coulter Systems Corporation: *See—*
Weitzen, Edward H.; D'Amato, Salvatore F.; Fleming, Robert M.; Kuehnle, Manfred R.; Ekman, C. Frederick; Kruse, Jurgen; and Weber, Harold J., 4,455,039, Cl. 283-83.000.

Couper, Alastair N.: *See—*
Bhaskar, Kasi S.; Carlson, Alden J.; Couper, Alastair N.; Lambert, Dennis L.; and Scott, Marshall H., 4,455,654, Cl. 371-20.000.

Cozzens, Ray J.: *See—*
Walden, Jack M.; Eads, William D.; Cozzens, Ray J.; Bidwell, John L.; Jewett, Robert A.; Wilson, Martin S.; Griffin, Daniel J.; Kuseski, Robert E.; and Schulte, Louis T., 4,455,618, Cl. 364-900.000.

Craig, Laurence B.; and Farina, Alfred J., to Thermocatalytic Corporation. Thermocatalytic reactor and process for producing same. 4,455,196, Cl. 162-152.000.

Craven, Herman R.: *See—*
Childers, Spencer L.; and Craven, Herman R., 4,454,961, Cl. 221-266.000.

Crawford, Christopher L.: *See—*
Harner, Donald R.; Kaley, Robert C.; and Crawford, Christopher L., 4,455,058, Cl. 339-99.00R.

Croft, John E.: *See—*
McFarlane, Stuart J.; and Croft, John E., 4,455,298, Cl. 424-95.000.

Crompton and Knowles Corporation: *See—*
Brode, David A., 4,455,258, Cl. 260-160.000.

Croteau, Denis; Caspar, Roman; Krishnan, Ramamurthy G.; Malashenko, Alexander; Bryce, Rodney H.; Soomet, Valdur; and Deperis, Giovanni, to Dominion Engineering Works Limited. Stock supply system for paper machine. 4,455,197, Cl. 162-343.000.

Crown Metal Manufacturing: *See—*
Varon, David S.; and Dorner, Steven C., 4,455,007, Cl. 248-251.000.

Crum, Stephen T.; and Keister, Lyle T. Intrinsically safe lighting system. 4,455,509, Cl. 315-119.000.

Cudini, Ivano G., to Standard Tube Canada Limited. Process for cold-forming a tube having a thick-walled end portion. 4,454,745, Cl. 72-370.000.

Culler, William B.: *See—*
Stoller, David A., Sr.; Culler, William B.; and Wiesner, Paul E., 4,454,823, Cl. 105-423.000.

Curchod, Donald B., to Amfit, Inc. System and method for forming custom-made shoe insert. 4,454,618, Cl. 12-1.00R.

Curtiss, William P.: *See—*
Fulton, Donald E.; Curtiss, William P.; and Fejes, William T., Jr., 4,455,513, Cl. 318-138.000.

Cushing, David E.; Lemay, Richard A.; Stanley, Philip E.; and Woods, William E., to Honeywell Information Systems Inc. Logic control system for efficient memory to CPU transfers. 4,455,606, Cl. 364-200.000.

Custer, Milton F.: *See—*
Laufenberg, Carol J.; and Custer, Milton F., 4,454,873, Cl. 128-90.000.

Cutter Laboratories, Inc.: *See—*
Mitra, Gautam; and Lundblad, John L., 4,455,301, Cl. 424-101.000.
Wallace, Donald G.; Schneider, Phillip M.; and Lundblad, John L., 4,455,300, Cl. 424-101.000.

Cuylits, Jacques; Lenssen, Paul; and Chatelle, Philippe P., to S.A. Constructions Ferroviaires et Metalliques. System for automatically guiding a vehicle provided with tired wheels. 4,454,819, Cl. 104-245.000.

Cyklop International Emil Hoffmann KG: *See—*
Wehr, Hubert; and Fritze, Rolf-Gunther, 4,454,808, Cl. 100-4.000.

D. H. Haden Limited: *See—*
Haden, Denis H., 4,455,476, Cl. 219-328.000.

Daikin Kogyo Co., Ltd.: *See—*
Sakitani, Katsumi; Maekawa, Takashi; Fujimoto, Satoru; Tajima, Tetsuro; and Hiroyasu, Makoto, 4,455,129, Cl. 418-82.000.

Dainippon Inc.: *See—*
Takatsu, Haruyoshi; and Sato, Hisato, 4,455,443, Cl. 570-129.000.

Dainippon Ink and Chemicals, Inc.: *See—*
Sasaki, Makoto; Takatsu, Haruyoshi; Sato, Hisato; Shimamura, Tuneo; Toriyama, Kazuhisa; and Nakagomi, Tamihito, 4,455,261, Cl. 260-465.00D.

Dainippon Screen Mfg. Co., Ltd.: *See—*
Matsumoto, Katsutoshi, 4,454,810, Cl. 101-141.000.

Dale, Jim E., to United States of America, Agriculture. Rope wick chemical recovery apparatus. 4,454,680, Cl. 47-1.500.

Dallas Smith Engineering Corp.: *See—*
Smith, Earl D., 4,455,119, Cl. 414-537.000.

D'Amato, Salvatore F.: *See—*
Weitzen, Edward H.; D'Amato, Salvatore F.; Fleming, Robert M.; Kuehnle, Manfred R.; Ekman, C. Frederick; Kruse, Jurgen; and Weber, Harold J., 4,455,039, Cl. 283-83.000.

Danilevsky, Nikolai F.: *See—*
Portnyagina, Vera A.; Karp, Valentina K.; Barkova, Irina S.; Trinus, Fedor P.; Mokhort, Nikolai A.; Fadeicheva, Alexandra G.; Kozhushko, Galina I.; Ryabukha, Tatyana K.; Panteleimonov, Alexandr G.; Kljushin, Viktor V.; Dobrovolsky, Jury N.; Kirichek, Larisa M.; Medvedovsky, Adolf A.; Getman, Galina A.; Usenko, Jury D.; Sidelnikov, Viktor M.; Danilevsky, Nikolai F.; and Solsky, Yakov P., 4,455,312, Cl. 424-251.000.

Data General Corporation: *See—*
Ahlstrom, John K.; Bachman, Brett; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr; and Weil, Douglas M., 4,455,604, Cl. 364-200.000.
Baxter, Ward, III; Coder, William N.; and Haeffele, Steven M., 4,455,602, Cl. 364-200.000.
Bratt, Richard G.; Katz, Lawrence H.; and Wells, Douglas M., 4,455,603, Cl. 364-200.000.

Datta, Pabitra; and Poliniak, Eugene S., to RCA Corporation. High density information disc lubricants. 4,455,335, Cl. 428-64.000.

Davanture, Robert. Protective enclosure for a stationary or movable machine. 4,454,694, Cl. 52-270.000.

David Brown Tractors Ltd.: *See—*
Wade, Philip M.; and Williams, Robert T., 4,454,717, Cl. 60-453.000.

Davis, Charles L.: *See*—
Bachmann, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., 4,454,670, Cl. 40-584.000.
Davis Instruments Corporation: *See*—
Weinstein, Albert; Skeen, Michael A.; and Connell, John L., 4,454,757, Cl. 73-189.000.
Davis, Thomas L.: *See*—
Ayres, Paul S.; and Davis, Thomas L., 4,455,352, Cl. 428-485.000.
Day, Alvin L.; and Jordan, Howard E., to Reliance Electric Company. Energy saver control for single phase motors. 4,455,521, Cl. 318-798.000.
Day, Delbert E.; and Wilder, James A., Jr., to United States of America, Energy. Chemically durable nitrogen containing phosphate glasses useful for sealing to metals. 4,455,384, Cl. 501-15.000.
de la Fuente, Carlos; and Amelot, Bernard, to Freyssinet International (STUP). Apparatus for releasing pre-stress cable gripping means when said cable is being detensioned. 4,454,633, Cl. 24-115.00R.
Dean, Arthur L.; Kraft, Robert E.; and Marshall, Kenneth M., to FMC Corporation. Electromagnetic vibratory exciter. 4,455,496, Cl. 310-29.000.
de Cleur, Eckhard: *See*—
Meyer, Rolf-Volker; Kreuder, Hans J.; and de Cleur, Eckhard, 4,455,425, Cl. 544-253.000.
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Love, Mahlon L.; and Corkery, Leon J., 4,454,787, Cl. 74-781.00R.
Symonds, Dean H.; and Brandon, David E., 4,455,555, Cl. 340-870.310.
Degginger, Edward R., to Allied Corporation. Rigid, non-elastomeric, non-cellular, amorphous metal reinforced polyether-urethane compositions. 4,455,404, Cl. 524-439.000.
de Graff, Peter; and Schweitz, Donald, to Canadian Co-Operative Implements Limited. Transport device for pull-type swathers and the like. 4,455,034, Cl. 280-415.00R.
Degussa Aktiengesellschaft: *See*—
Domesle, Rainer; and Volker, Herbert, 4,455,393, Cl. 502-347.000.
Panster, Peter; Kleinschmit, Peter; and Buder, Wolfgang, 4,455,415, Cl. 528-39.000.
Schmidt, Sabine; Kleinschmit, Peter; Schwarz, Rudolf; and Domesle, Rainer, 4,455,246, Cl. 252-62.000.
Delagebeaudeuf, Daniel; and Nuyen, Trong L., to Thomson-CSF. Field effect transistor with a high cut-off frequency. 4,455,564, Cl. 357-22.000.
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Williams, Frank J., III; and Dellacoletta, Brent A., 4,455,431, Cl. 548-461.000.
DeLucia, Victor E. Arc proof dual interlock safety switch. 4,455,462, Cl. 200-61.620.
Demke, Kent R., to International Business Machines Corporation. Proportionality in minature displays. 4,455,554, Cl. 340-731.000.
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Scharf, Heino W., 4,455,118, Cl. 414-494.000.
Denis, Bernard A.; and Eardley, David B., to International Business Machines Corporation. Random access memory cell. 4,455,625, Cl. 365-154.000.
Dennesen Electrostatics, Inc.: *See*—
Sliski, Alan P., 4,455,641, Cl. 369-249.000.
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Croteau, Denis; Caspar, Roman; Krishnan, Ramamurthy G.; Malashenko, Alexander; Bryce, Rodney H.; Soomet, Valdur; and Deperis, Giovanni, 4,455,197, Cl. 162-343.000.
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von Blucher, Hubert; von Blucher, Hasso; and de Ruiter, Ernst, 4,455,187, Cl. 156-277.000.
DeSantis, Frank A.: *See*—
Musits, Bela L.; and DeSantis, Frank A., 4,455,044, Cl. 294-113.000.
DeSisto, Richard E. Means for adjusting motor end play. 4,455,498, Cl. 310-42.000.
Detienne, Jean-Louis; Levesque, Guy; and Tozzolino, Pierre, to Societe Nationale Elf Aquitaine (Production). Process of production of organic dithio-acids. 4,455,262, Cl. 260-502.600.
Devesey, Joseph E.; and Sanderson, Stephen N., to United States of America, Energy. Rotatable stem and lock. 4,454,934, Cl. 188-171.000.
DeVore, Henry S.: *See*—
Windeler, Christopher L.; DeVore, Henry S.; Seal, David B.; and Budzyn, Boleslaw L., 4,454,996, Cl. 242-25.00R.
De Vries, Hans: *See*—
Birkle, Siegfried; Stoger, Klaus; and De Vries, Hans, 4,455,201, Cl. 204-58.000.
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Parker, Wesley A.; Dewitz, Thomas S.; Hinds, George P., Jr.; Gwyn, John E.; Bilgic, A. Haluk; and Hardesty, Donald E., 4,455,220, Cl. 208-161.000.
Diafloc Co., Ltd.: *See*—
Handa, Ryoji; Hosoda, Jun; Ariyama, Kenzo; Okushima, Osamu; and Kurashige, Nobuo, 4,455,411, Cl. 526-208.000.
Diamond, Michael K. Dental instrument and method for positioning a lingual orthodontic bracket. 4,455,137, Cl. 433-3.000.
Dickhart, William W., III, to Budd Company, The. Radial articulated truck. 4,454,821, Cl. 105-4.00R.
Diebold, Incorporated: *See*—
Anders, Walter G., 4,455,112, Cl. 406-110.000.
Diehl GmbH & Co.: *See*—
Potthof, Erwin; and Kruger, Tilmann, 4,455,587, Cl. 361-160.000.
Diehr, Hans-Joachim; and Priesnitz, Uwe, to Bayer Aktiengesellschaft. Preparation of hetaryloxyacetamides. 4,455,428, Cl. 548-187.000.
Dieterich, Charles B., to RCA Corporation. Coding system for recorded digital audio. 4,455,635, Cl. 369-59.000.
Dieterich, Philipp A.: *See*—
Barrois, Claus D.; and Dieterich, Philipp A., 4,454,813, Cl. 101-349.000.
Dietrich, William J., Sr., to DMI, Inc. High speed tillage system with discs and plow points. 4,454,920, Cl. 272-464.000.
Dillon, Kenneth R.; and Terchek, Richard L., to Minnesota Mining and Manufacturing Company. Dimensionally-controlled cobalt-containing precision molded metal article. 4,455,354, Cl. 428-568.000.
Dills, Raymond L., to General Electric Company. Metal rack for microwave oven. 4,455,467, Cl. 219-10.55E.
Dilo, Richard, to Oskar Dilo Maschinenfabrik KG. Method for producing velour needlefelt webs. 4,454,637, Cl. 28-110.000.
Dionex Corporation: *See*—
Pohl, Christopher A.; Slingsby, Rosanne W.; Johnson, Edward L.; and Angers, Leilani, 4,455,233, Cl. 210-635.000.
Discovision Associates: *See*—
Efron, Edward; McPherson, James O.; and Kim, Young B., 4,455,634, Cl. 369-58.000.
Dixon, Guy E., to Panelfold, Inc. Portable and operable wall system. 4,454,690, Cl. 52-126.300.
DMI, Inc.: *See*—
Dietrich, William J., Sr., 4,454,920, Cl. 272-464.000.
Dobrovolsky, Jury N.: *See*—
Portnyagina, Vera A.; Karp, Valentina K.; Barkova, Irina S.; Trinus, Fedor P.; Mokhort, Nikolai A.; Fadeicheva, Alexandra G.; Kozhushko, Galina I.; Ryabukha, Tatyana K.; Panteleimonov, Alexandr G.; Kljushin, Viktor V.; Dobrovolsky, Jury N.; Kirichek, Larisa M.; Medvedovsky, Adolf A.; Getman, Galina A.; Usenko, Jury D.; Sidelnikov, Viktor M.; Danilevsky, Nikolai F.; and Solsky, Yakov P., 4,455,312, Cl. 424-251.000.
Dolan, Donald T.; and Stalzer, Henry, to Pitney Bowes Inc. Control of a light emitting diode array. 4,455,562, Cl. 346-154.000.
Dolikian, Arman V., to Motorola, Inc. Multiple simultaneous tone decoder. 4,455,617, Cl. 364-724.000.
Domesle, Rainer; and Volker, Herbert, to Degussa Aktiengesellschaft. Catalyst for reducing the ignition temperature of diesel soot and process for making the catalyst. 4,455,393, Cl. 502-347.000.
Domesle, Rainer: *See*—
Schmidt, Sabine; Kleinschmit, Peter; Schwarz, Rudolf; and Domesle, Rainer, 4,455,246, Cl. 252-62.000.
Dominion Engineering Works Limited: *See*—
Croteau, Denis; Caspar, Roman; Krishnan, Ramamurthy G.; Malashenko, Alexander; Bryce, Rodney H.; Soomet, Valdur; and Deperis, Giovanni, 4,455,197, Cl. 162-343.000.
Don Wright Golf Company: *See*—
Wright, Donald, 4,455,022, Cl. 273-77.00A.
Dorner, Steven C.: *See*—
Varon, David S.; and Dorner, Steven C., 4,455,007, Cl. 248-251.000.
Dow Chemical Company, The: *See*—
Ehr, Robert J., 4,455,313, Cl. 424-263.000.
Settineri, William J.; Charles, John G.; Hinkel, Jerald J.; and Malone, Bradley P., 4,455,175, Cl. 134-5.000.
Downie, David E.; Schneiderman, Gary; Shulse, Eric D.; and Withers, Stanley J., to Thoratec Laboratories Corporation. Combination membraning tool, package and calibration unit for eyelid sensor or the like. 4,454,643, Cl. 29-270.000.
Doyle, Stephen D.: *See*—
Bulso, Joseph D., Jr.; and Doyle, Stephen D., 4,454,743, Cl. 72-349.000.
Draganov, Samuel M. Wet processing apparatus for rendering cellulosic insulation particles fire-retardant. 4,454,992, Cl. 241-42.000.
Dragerwerk Aktiengesellschaft: *See*—
Heiland, Gerhard; and Laurs, Heinz, 4,455,378, Cl. 436-126.000.
Drahtsteilwerk Saar GmbH: *See*—
Verreet, Roland, 4,454,708, Cl. 57-215.000.
Drehobl, Claus, to Veb Kombinat Polygraph "Werner Lamberz" Leipzig. Control provision for separating printed matter. 4,455,518, Cl. 318-632.000.
Dreibelbis, Richard C.; and Smith, Richard J., to Emerson Electric Co. (H & H Precision Products Division). Air gap drain module for use in a reverse osmosis system. 4,454,891, Cl. 137-216.000.
Dria, Dennis E.; and Bremer, Noel J., to Standard Oil Company, The. Process for the preparation of maleic anhydride. 4,455,434, Cl. 549-260.000.
Dringoli, Paul D.: *See*—
Schilke, David C.; and Dringoli, Paul D., 4,455,001, Cl. 242-192.000.
Duchenet, Bernard: *See*—
Baroi, Stefan I.; and Duchenet, Bernard, 4,455,102, Cl. 403-173.000.
Dudley, Tex M.: *See*—
Cornwell, William J.; Dudley, Tex M.; and Lee, William H., 4,455,512, Cl. 318-135.000.
Dugan, Robert J.: *See*—
Cormier, Roger L.; Dugan, Robert J.; Guyette, Richard R.; Wanish, Paul J.; and Zeitler, Carl, Jr., 4,455,605, Cl. 364-200.000.
Duncker, Michiel J.; and Kreetz, Johan R., to Akzo N.V. Solar collector comprising a heat exchanger. 4,454,864, Cl. 126-433.000.
Dundon, John P.; and Klingsberg, Erwin, to American Cyanamid Company. Method for the preparation of Leuco Crystal Violet Lactone. 4,455,435, Cl. 549-309.000.

Du Pont de Nemours, E. I., and Company: *See—*
Barsotti, Robert J., 4,455,331, Cl. 428-446.000.
Bartelsman, Bart W.; and Fost, Dennis L., 4,455,370, Cl. 435-6.000.
Jaffe, Edward E., 4,455,173, Cl. 106-288.00Q.
Maguire, Stephen A., 4,455,461, Cl. 200-61.45R.
Duprez, Wayne R. Diesel fuel control apparatus and system. 4,454,848, Cl. 123-516.000.
Duracell Inc.: *See—*
Graham, Teresita O.; and Goodman, John T., 4,455,358, Cl. 429-190.000.
Durbin-Durco, Inc.: *See—*
Durbin, Votaw S., III, 4,454,744, Cl. 72-362.000.
Durbin, Votaw S., III, to Durbin-Durco, Inc. Method of forging a bifurcated member. 4,454,744, Cl. 72-362.000.
Durr, Dieter; Rohr, Otto; and Bohner, Beat, to Ciba-Geigy Corporation. Aminoalkyl esters of 2-nitro-5-(o-chloro-p-trifluoromethylphenoxy)-benzoic acid. 4,455,437, Cl. 560-21.000.
Duvivier, John E. Slotted panels with slotted connectors. 4,454,678, Cl. 446-112.000.
Dworak, Wilhelm; Mayer, Siegfried; Muller, Karl-Heinz; Talmon, Wolfgang; and Wolff, Gunter, to Robert Bosch GmbH. Gear machine with oppositely aligned sealing elements. 4,455,130, Cl. 418-132.000.
Dworsky, Lawrence N.; Weisman, Douglas H.; and Ninh, Loi Q., to Motorola, Inc. Method for tuning piezoelectric resonators. 4,454,639, Cl. 29-25.350.
Dyar, Harrison G. Thermal insulating system particularly adapted for building construction. 4,454,697, Cl. 52-407.000.
Dymock, Kenneth R.; and Bell, Malcolm C., to Inco Limited. Hydrogenation of carbonaceous material. 4,455,218, Cl. 208-50.000.
Dynamit Nobel Aktiengesellschaft: *See—*
Budich, Wolfgang; Gasper, Bertram; Kurth, Josef; Scharf, Karl-Gunter; and Wissinger, Waldemar, 4,455,398, Cl. 523-220.000.
Dziubakowski, Donald J., to Babcock & Wilcox Company, The. Enhanced sootblowing system. 4,454,840, Cl. 122-390.000.
e.d. Veglia: *See—*
Coulange, Jean, 4,454,761, Cl. 73-308.000.
Eads, William D.: *See—*
Walden, Jack M.; Eads, William D.; Cozzens, Ray J.; Bidwell, John L.; Jewett, Robert A.; Wilson, Martin S.; Griffin, Daniel J.; Kuseski, Robert E.; and Schulte, Louis T., 4,455,618, Cl. 364-900.000.
Eardley, David B.: *See—*
Denis, Bernard A.; and Eardley, David B., 4,455,625, Cl. 365-154.000.
Eastman Kodak Company: *See—*
Fearnside, William T., 4,455,578, Cl. 358-302.000.
Ebara Corporation: *See—*
Shibata, Tomoyuki; and Nakayama, Mituhito, 4,454,993, Cl. 241-46.00B.
Ebeling, Harold O.: *See—*
Honerkamp, Joseph D.; and Ebeling, Harold O., 4,455,157, Cl. 55-234.000.
Ebinger, Horst: *See—*
Sartor, Bruno; Jager, Werner; Ebinger, Horst; Luthardt, Gunther; and Bergmann, Walter, 4,455,207, Cl. 204-192.00E.
Eccleston, Barry C.; Sinclair, Alexander S.; and Elliot, Michael, to A. Monk and Company Limited. Advancing of apparatus for refurbishing overhead structures. 4,454,818, Cl. 104-98.000.
Ecer, Gunes M.; Stol, Israel; and Lessmann, Gerald G., to Westinghouse Electric Corp. Arc welding method and electrode for narrow groove welding. 4,455,471, Cl. 219-125.120.
Echlin Inc.: *See—*
Bueler, Richard C., 4,455,052, Cl. 303-6.00C.
Falk, Edward J., 4,455,051, Cl. 303-6.00C.
Eck, Leonard F., to Kansas Jack, Inc. Adjustable bar carriage for an alignment apparatus. 4,454,659, Cl. 33-288.000.
Ecuer, John H.; and Watkins, Michael D., to Standard Oil Company. High-low level control test method and apparatus. 4,454,747, Cl. 73-1.00H.
Edison Control Corporation: *See—*
Russell, Taft B., 4,454,635, Cl. 24-462.000.
Efron, Edward; McPherson, James O.; and Kim, Young B., to Discovision Associates. Audio/video quality monitoring system. 4,455,634, Cl. 369-58.000.
Eggler, James F.: *See—*
Bindra, Jaajit S.; Eggler, James F.; Johnson, Michael R.; and Schaaf, Thomas K., 4,455,421, Cl. 548-252.000.
Eguchi, Seiji: *See—*
Suzuki, Seigo; Eguchi, Seiji; and Moriya, Yoshiaki, 4,455,608, Cl. 364-200.000.
Egusa, Tomoyoshi; Miki, Yutaka; Kuroda, Masayuki; Fujimoto, Koshiro; and Niki, Motoharu, to NTN Toyo Bearing Co., Ltd. Method of producing bearing devices for driving wheels of automobiles. 4,454,640, Cl. 29-148.40A.
Ehr, Robert J., to Dow Chemical Company, The. Fungicidal control employing substituted pyridinols. 4,455,313, Cl. 424-263.000.
Eirich, Luther A.: *See—*
Cohen, Michael A.; and Eirich, Luther A., 4,455,161, Cl. 71-24.000.
Eisai Co., Ltd.: *See—*
Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Suzuki, Takeshi; Kinoshita, Kensaku; Mishima, Mannen; Katoh, Yoshinori; Kobayashi, Seiichi; Murakami, Manabu; and Yamada, Kouzi, 4,455,316, Cl. 424-274.000.
Ekman, C. Frederick: *See—*
Weitzen, Edward H.; D'Amato, Salvatore F.; Fleming, Robert M.; Kuehnle, Manfred R.; Ekman, C. Frederick; Kruse, Jurgen; and Weber, Harold J., 4,455,039, Cl. 283-83.000.
Electrodyne Research Corporation: *See—*
Strohmeyer, Charles, Jr., 4,454,838, Cl. 122-4.000.
Electronic Concepts, Inc.: *See—*
Lavene, Bernard, 4,455,591, Cl. 361-310.000.
Elephant Industries, Inc.: *See—*
Schosek, William O., 4,455,107, Cl. 405-184.000.
Elgas, Roger J.; and Carson, Gary A., to Cobe Laboratories, Inc. Pleated membrane transfer device utilizing potting and thixotropic adhesive. 4,455,230, Cl. 210-232.000.
Elliot, Michael: *See—*
Eccleston, Barry C.; Sinclair, Alexander S.; and Elliot, Michael, 4,454,818, Cl. 104-98.000.
Ellis, Eugene. Chemical tester for pools. 4,454,775, Cl. 73-864.510.
Ellis, Jim E., to Van Zandt, Hillard C. Drill pipe measuring tool. 4,454,655, Cl. 33-141.00G.
Ellis, John: *See—*
Spensley, Robert H.; and Ellis, John, 4,455,171, Cl. 106-104.000.
Ellis, Wayne S. Band saw. 4,454,795, Cl. 83-820.000.
Elmes, Paul B. Method and apparatus for fingerprint verification of identity. 4,455,083, Cl. 356-71.000.
Elscint, Ltd.: *See—*
Inbar, Dan, 4,455,616, Cl. 364-527.000.
Emerson Electric Co.: *See—*
Rendel, Robert D., 4,455,449, Cl. 174-53.000.
Emerson Electric Co. (H & H Precision Products Division): *See—*
Dreibelbis, Richard C.; and Smith, Richard J., 4,454,891, Cl. 137-216.000.
Emhart Industries, Inc.: *See—*
Nansel, Harold K., 4,454,768, Cl. 73-861.760.
Emilio, Stanoppi. Special lathe, particularly for making settings exactly fitting the gem or the like. 4,454,638, Cl. 29-10.000.
Emilsson, Fred S.; Severinsson, Lars M.; and Stensson, Bo G., to SAB Industri AB. Suspension means for a rail vehicle disc brake unit. 4,454,932, Cl. 188-59.000.
Empco (Canada) Ltd.: *See—*
Wunsche, Edgar R., 4,455,017, Cl. 266-190.000.
Encoyand, Roland C.: *See—*
Billard, Alain A. A.; Calmettes, Hubert C. G.; and Encoyand, Roland C., 4,454,816, Cl. 102-430.000.
Endo, Munehiro: *See—*
Kodama, Hideyo; Niyama, Eisuke; Endo, Munehiro; and Kimura, Tomoaki, 4,454,908, Cl. 164-454.000.
Engel, Joseph C.; Hanson, Richard E.; Simms, Kenneth W.; and Spreadbury, Robert J., to Westinghouse Electric Corporation. Packaged add-on device for lead-type ballast and luminaire which incorporates such packaged add-on device. 4,455,595, Cl. 362-265.000.
Enomoto, Tadao, to Citizen Watch Company Limited. Method of manufacturing a timepiece component. 4,455,199, Cl. 204-4.000.
Epema, Sijtse: *See—*
van der Sloot, Bart; and Epema, Sijtse, 4,454,685, Cl. 49-110.000.
Epic Metals Corporation: *See—*
Ault, Robert L., 4,454,692, Cl. 52-221.000.
Equatorial Communications Company: *See—*
Baran, Paul, 4,455,651, Cl. 370-104.000.
Erich Salzle: *See—*
Gunther, Paul, 4,455,332, Cl. 427-421.000.
Erickson, Donald C. Aqueous absorbent for absorption cycle heat pump. 4,454,724, Cl. 62-112.000.
Esteban, Daniel J.; Jones, Gardner D., Jr.; and Rogers, Lee S., to International Business Machines Corporation. Method and apparatus for efficient statistical multiplexing of voice and data signals. 4,455,649, Cl. 370-80.000.
Etablissements Francois Salomon & Fils S.A.: *See—*
Grailliat, Gerard; Pradier, Serge; and Salomon, Georges P. J., 4,454,663, Cl. 36-120.000.
Etat Francais representé par le Delegue General pour l'Armement: *See—*
Sedat, Georges, 4,455,178, Cl. 149-19.600.
Ethyl Corporation: *See—*
Marlett, Everett M., 4,455,433, Cl. 548-531.000.
McKinnie, Bonnie G.; and Robinson, Gene C., 4,455,387, Cl. 502-153.000.
Ethyl Products Company: *See—*
Kirk, Donald C., Jr., 4,454,965, Cl. 222-153.000.
Evans Products Company: *See—*
Shaltis, Jerold R., 4,454,984, Cl. 237-2.00A.
Ex-Cell-O Corporation: *See—*
Liechty, Deryll, 4,454,642, Cl. 29-229.000.
Excelermatic Inc.: *See—*
Kraus, Charles E., 4,454,788, Cl. 74-798.000.
Exxon Research & Engineering Co.: *See—*
Gater, Roger A.; and Michelson, Herbert D., 4,454,839, Cl. 122-333.000.
Gutierrez, Antonio; Brownawell, Darrel W.; Portnoy, Robert C.; and Brois, Stanley J., 4,455,429, Cl. 548-239.000.
Fadeicheva, Alexandra G.: *See—*
Portnyagina, Vera A.; Karp, Valentina K.; Barkova, Irina S.; Trinus, Fedor P.; Mokhort, Nikolai A.; Fadeicheva, Alexandra G.; Kozhushko, Galina I.; Ryabukha, Tatyana K.; Panteleimonov, Alexandr G.; Kljushin, Viktor V.; Dobrovolsky, Jury N.; Kirichek, Larisa M.; Medvedovsky, Adolf A.; Getman,

Galina A.; Usenko, Jury D.; Sidelnikov, Viktor M.; Danilevsky, Nikolai F.; and Solsky, Yakov P., 4,455,312, Cl. 424-251.000.
Fairchild Camera and Instrument Corporation: *See*—
Razouk, Reda, 4,455,325, Cl. 427-85.000.
Fajt, John; and Neal, James V., Jr., to Xenell Corporation. Apparatus and methods for handling electrical components. 4,454,941, Cl. 198-389.000.
Faler, Gary R.; and Campbell, John R., to General Electric Company. Method for making bisphenol catalysts. 4,455,409, Cl. 525-351.000.
Falk, Edward J., to Echlin Inc. Ratio control valve for tractor rear axles. 4,455,051, Cl. 303-6.00C.
Farina, Alfred J.: *See*—
Craig, Laurence B.; and Farina, Alfred J., 4,455,196, Cl. 162-152.000.
Farrar, William B.; and Norton, Don S., to Brell Mar Products, Inc. X-Ray cassette holder with beam-limiting device. 4,455,670, Cl. 378-147.000.
Farrar, William B., to Brell Mar Products, Inc. X-Ray cassette holder. 4,455,671, Cl. 378-170.000.
Fathauer, George H.; and Williamson, Warren L., to Masco Corporation of Indiana. Scanning radio receiver and frequency synthesizer therefor. 4,455,679, Cl. 455-165.000.
Fayen, Carl F. Bathroom appliance for concurrently sharpening razor blades and treating gum tissue by spaced pressure pulses of liquid. 4,454,866, Cl. 128-38.000.
Fearnside, William T., to Eastman Kodak Company. Electronics for arrayed photosources. 4,455,578, Cl. 358-302.000.
Federal Products Corporation: *See*—
Clark, Earl S., 4,454,762, Cl. 73-432.00A.
Fegley, Charles R. Fluid dispensing anti-burglar device. 4,454,963, Cl. 222-5.000.
Feinmechanische Werke Mainz GmbH: *See*—
Koepper, Rudolf; and Rowold, Karl-Joachim, 4,454,800, Cl. 91-51.000.
Fejes, William T., Jr.: *See*—
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Fellus, Victor M., to Therafield Holdings Limited. Electrotherapeutic apparatus. 4,454,883, Cl. 128-422.000.
Fiat Auto S.p.A.: *See*—
Messori, Pier P., 4,455,132, Cl. 418-206.000.
Filippi, Rodolfo, to Rentham Limited. Flow regulation device for waste waters. 4,455,231, Cl. 210-519.000.
Filippov, Vladimir I.; Parshin, Nikolai I.; Barabanov, Igor V.; Marmer, Eduard N.; Puzanov, Alexandr F.; Lobanov, Alexandr B.; Usaty, Jury P.; Gerasimov, Vladimir I.; Tikhonov, Arkady K.; and Turulin, Viktor N. Method and apparatus for chemical heat treatment of steel parts utilizing a continuous electric furnace. 4,455,177, Cl. 148-155.000.
Fillmore, William E.: *See*—
Kusz, Maximillian; and Fillmore, William E., 4,454,955, Cl. 215-220.000.
Fincher, Keith W.: *See*—
Lewis, David M.; Brady, Peter R.; Cookson, Peter G.; and Fincher, Keith W., 4,455,147, Cl. 8-471.000.
Findeisen, Kurt; and Kranz, Eckart, to Bayer Aktiengesellschaft. Preparation of acyl cyanides. 4,455,264, Cl. 260-545.00R.
Fink, Herbert; Kniese, Heiner; Suetterlin, Norbert; Mueller, Klaus; and Siol, Werner, to Rohm GmbH. Acrylic resin dispersions. 4,455,342, Cl. 428-265.000.
Finkelmeier, Horst: *See*—
Hopp, Rudolf; Finkelmeier, Horst; and Langner, Roland, 4,455,295, Cl. 424-60.000.
Finkelshtein, Julia L., administrator: *See*—
Sizyakov, Viktor M.; Kaluzhsky, Nikolai A.; Badaiants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Isakov, Evgeny A.; Alexandrova, Zarya N.; Afanasiev, Valentin N.; Chernov, Vinetsy I.; Zhukov, Alexandr G.; Kutsenko, Viktor S.; Vysotskaya, Galina M.; Ostrovlyanchik, Evgenia S.; Mironov, Evgeny I.; Vladimirov, Pavel S.; Alexeev, Alexei I.; Finkelshtein, Leonid I., deceased; Finkelshtein, Nina J., administrator; and Finkelshtein, Julia L., administrator, 4,455,284, Cl. 423-119.000.
Finkelshtein, Leonid I., deceased: *See*—
Sizyakov, Viktor M.; Kaluzhsky, Nikolai A.; Badaiants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Isakov, Evgeny A.; Alexandrova, Zarya N.; Afanasiev, Valentin N.; Chernov, Vinetsy I.; Zhukov, Alexandr G.; Kutsenko, Viktor S.; Vysotskaya, Galina M.; Ostrovlyanchik, Evgenia S.; Mironov, Evgeny I.; Vladimirov, Pavel S.; Alexeev, Alexei I.; Finkelshtein, Leonid I., deceased; Finkelshtein, Nina J., administrator; and Finkelshtein, Julia L., administrator, 4,455,284, Cl. 423-119.000.
Finkelshtein, Nina J., administrator: *See*—
Sizyakov, Viktor M.; Kaluzhsky, Nikolai A.; Badaiants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Isakov, Evgeny A.; Alexandrova, Zarya N.; Afanasiev, Valentin N.; Chernov, Vinetsy I.; Zhukov, Alexandr G.; Kutsenko, Viktor S.; Vysotskaya, Galina M.; Ostrovlyanchik, Evgenia S.; Mironov, Evgeny I.; Vladimirov, Pavel S.; Alexeev, Alexei I.; Finkelshtein, Leonid I., deceased; Finkelshtein, Nina J., administrator; and Finkelshtein, Julia L., administrator, 4,455,284, Cl. 423-119.000.
Finkenzeller, Johann: *See*—
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Finnerty, Suja P.; and Hangos, Russell A., to Cooper Laboratories, Inc. Clotting assay and reagent therefor. 4,455,377, Cl. 436-69.000.
Firestone Tire & Rubber Company, The: *See*—
Haldeman, Janice L., 4,455,265, Cl. 524-145.000.
First Taxing District, Water Department of the City of Norwalk, Connecticut: *See*—
Arnold, Orlan M., 4,455,531, Cl. 324-448.000.
Fischer, Gerhard; and Berger, Harald, to Interpatent B.V. Hoist. 4,455,013, Cl. 254-267.000.
Fischer, James R.: *See*—
Wylegala, Kenneth B.; Fischer, James R.; Long, Franklin A.; and Golob, Deborah L., 4,455,252, Cl. 252-186.260.
Fischer, Robert T., to Miner Enterprises, Inc. Gate assembly unit for ballast distribution from railroad car. 4,454,822, Cl. 105-250.000.
Fleming, Robert M.: *See*—
Weitzen, Edward H.; D'Amato, Salvatore F.; Fleming, Robert M.; Kuehnle, Manfred R.; Ekman, C. Frederick; Kruse, Jurgen; and Weber, Harold J., 4,455,039, Cl. 283-83.000.
Florence, Alain F.: *See*—
Noel, Daniel R. F.; and Florence, Alain F., 4,454,903, Cl. 152-361.0DM.
Flowdrill B.V.: *See*—
Hoogenboom, Aloysius J., 4,454,741, Cl. 72-71.000.
Flowers, Leonard J., to Aluminum Company of America. Continuous casting mold-starting plug alignment system. 4,454,907, Cl. 164-425.000.
Floyd, William C.; and North, Bernard F., to Sun Chemical Corporation. Cyclic urea/glyoxal/polyol condensates and their use in treating textile fabrics and paper. 4,455,416, Cl. 528-245.000.
Flum, Paul, to Paul Flum Ideas, Inc. Product merchandising display unit. 4,454,949, Cl. 211-49.00D.
FMC Corporation: *See*—
Dean, Arthur L.; Kraft, Robert E.; and Marshall, Kenneth M., 4,455,496, Cl. 310-29.000.
Fogg, O. Douglas: *See*—
Haag, George A.; Fogg, O. Douglas; Greenley, Gordon A.; Shepard, Steve A.; and Terry, F. Duncan, 4,455,624, Cl. 364-900.000.
Food Technology Products: *See*—
Glabe, Elmer F.; Anderson, Perry W.; and Laftsidis, Stergios, 4,455,321, Cl. 426-549.000.
Foote, Lawrence R.: *See*—
Giardini, Dante S.; and Foote, Lawrence R., 4,455,490, Cl. 290-38.00A.
Ford Motor Company: *See*—
Fox, David H.; Kostan, Charles C.; and Casaceli, Frank B., 4,454,856, Cl. 123-617.000.
Giardini, Dante S.; and Foote, Lawrence R., 4,455,490, Cl. 290-38.00A.
Martin, Brian D., 4,455,049, Cl. 297-379.000.
Rest, Heinz; and Giese, Ralf, 4,454,688, Cl. 49-502.000.
Stockton, Thomas R., 4,454,786, Cl. 74-688.000.
Fost, Dennis L.: *See*—
Bartelaman, Bart W.; and Fost, Dennis L., 4,455,370, Cl. 435-6.000.
Foster, Danny S.; and Burns, Daniel L., to Sears Manufacturing Co., Inc. Adjustable vehicle seat mounting device. 4,455,009, Cl. 248-561.000.
Fox, David H.; Kostan, Charles C.; and Casaceli, Frank B., to Ford Motor Company. Distributor construction and signal generator. 4,454,856, Cl. 123-617.000.
Fox, James R.; Horwitz, Michael J.; and Charles, Jay R., to Telesciences, Inc. Telecommunication fault detecting system. 4,455,644, Cl. 370-13.000.
Fox, Shaffer W. Multipurpose headphone assembly. 4,455,677, Cl. 381-110.000.
Fox, Thomas J.: *See*—
Klein, John F.; Bhansali, Chandra K.; Fox, Thomas J.; Smyth, Richard T.; and Zatorski, Raymond A., 4,455,470, Cl. 219-121.0PP.
Franklin, Carl M.: *See*—
Oswald, Norman D.; Franklin, Carl M.; Gutzler, Marc H.; and Mankey, Harry S., 4,454,925, Cl. 180-22.000.
Frazier, Charles, to American Cyanamid Company. Stable liquid hard surface cleanser composition containing DGH and a quaternary germicide. 4,455,250, Cl. 252-106.000.
Freitag, Lonny R.: *See*—
Sierk, Randall L.; and Freitag, Lonny R., 4,454,783, Cl. 74-471.00R.
French, Ballard: *See*—
McChesney, John L.; and French, Ballard, 4,454,833, Cl. 118-651.000.
Freysinet International (STUP): *See*—
de la Fuente, Carlos; and Amelot, Bernard, 4,454,633, Cl. 24-115.00R.
Friedrichs, Renate: *See*—
Simm, Hans-Peter; Guhne, Wieland; Hoesch, Christoph; and Friedrichs, Renate, 4,454,627, Cl. 15-377.000.
Fritchle, Elena C.: *See*—
Pieslak, George; and Fritchle, Elena C., 4,455,204, Cl. 204-147.000.
Fritze, Rolf-Gunther: *See*—
Wehr, Hubert; and Fritze, Rolf-Gunther, 4,454,808, Cl. 100-4.000.
Froberg, Tord E. H.: *See*—
Gustafsson, John H.; and Froberg, Tord E. H., 4,454,614, Cl. 4-366.000.
Frohlich, Johann L.; Gamperl, Josef; Hanak, Peter; and Wawra, Gerhard, to OMV Aktiengesellschaft. Swab hoist use thereof in conveying crude oil and natural gas. 4,454,912, Cl. 166-53.000.
Frohning, Carl D.: *See*—
Bussemeier, Bernd; Frohning, Carl D.; Horn, Gerhardt; and Kluy, Werner, 4,455,395, Cl. 518-717.000.

Frohock, John H.: *See—*
Bianchetto, Peter E.; and Frohock, John H., 4,455,190, Cl. 156-504.000.
Fuhrhop, Ronald E., to Union Carbide Corporation. Post-mixed oxy-fuel gas cutting torch and nozzle and method of oxy-fuel gas cutting. 4,455,176, Cl. 148-9.00R.
Fuji Electric Co., Ltd.: *See—*
Shinkai, Kazuteru; Kohno, Masaru; Nakagawa, Yukio; Tamaoki, Norimasa; and Saito, Kiyoshi, 4,454,767, Cl. 73-861.180.
Fuji Photo Film Co., Ltd.: *See—*
Akashi, Goro; and Shirahata, Ryuji, 4,454,836, Cl. 118-718.000.
Hirano, Tsumoru; Umemoto, Makoto; and Yagihara, Morio, 4,455,366, Cl. 430-381.000.
Igarashi, Akira; and Nakamura, Sukenori, 4,455,346, Cl. 346-200.000.
Ishizuka, Akio; and Kitada, Akira, 4,455,323, Cl. 427-65.000.
Kojima, Tetsuro; Ishimaru, Shingo; Sugimoto, Naohiko; and Ikeda, Tadashi, 4,455,368, Cl. 430-507.000.
Miyatuka, Hajime; and Kasuga, Akira, 4,455,345, Cl. 428-332.000.
Murakoshi, Makoto, 4,455,575, Cl. 358-213.000.
Naito, Hideki; Hara, Hiroshi; and Yagihara, Morio, 4,455,363, Cl. 430-203.000.
Naoi, Takashi; and Kakimi, Fujio, 4,455,362, Cl. 430-137.000.
Seoka, Yoshio; and Aoki, Kozo, 4,455,367, Cl. 430-505.000.
Urata, Yukihide; Kasama, Yasuo; Moriuchi, Shigenori; and Okutsu, Eiichi, 4,455,365, Cl. 430-309.000.
Yoshida, Tetsuo; Ujihara, Motohiro; Watanabe, Takeshi; and Takagi, Akira, 4,455,327, Cl. 427-131.000.
Fuji Xerox Company, Ltd.: *See—*
Tamai, Masayoshi, 4,455,192, Cl. 156-628.000.
Fujii, Hideyuki: *See—*
Kazama, Ken; Muramoto, Ikuo; Kusunoki, Yoshinobu; Ozaki, Kenji; and Fujii, Hideyuki, 4,455,259, Cl. 260-397.250.
Fujii, Tadashi: *See—*
Shimada, Masaru; and Fujii, Tadashi, 4,455,168, Cl. 106-22.000.
Fujimoto, Koshiro: *See—*
Egusa, Tomoyoshi; Miki, Yutaka; Kuroda, Masayuki; Fujimoto, Koshiro; and Niki, Motoharu, 4,454,640, Cl. 29-148.40A.
Fujimoto, Satoru: *See—*
Sakitani, Katsumi; Maekawa, Takashi; Fujimoto, Satoru; Tajima, Tetsuro; and Hiroyasu, Makoto, 4,455,129, Cl. 418-82.000.
Fujino, Masahisa; Sunouchi, Akio; Konno, Tatsuo; and Suzuki, Ryuji, to Canon Kabushiki Kaisha. Single lens reflex camera. 4,455,072, Cl. 354-153.000.
Fujioka, Takafumi: *See—*
Banno, Kazuo; Fujioka, Takafumi; Osaki, Masaaki; and Nakagawa, Kazuyuki, 4,455,422, Cl. 544-363.000.
Fujisawa, Kyuichi; and Shibata, Mineo, to Alps Electric Co., Ltd. Pen recorder. 4,455,559, Cl. 346-139.00R.
Fujishima, Kazuyasu: *See—*
Ozaki, Hideyuki; Fujishima, Kazuyasu; and Shimotori, Kazuhiro, 4,455,628, Cl. 365-226.000.
Fujitsu Limited: *See—*
Narusawa, Toshiaki; Okada, Seiji; Muramatsu, Kiyohide; Yagishita, Teruo; and Okuyama, Hirofumi, 4,455,361, Cl. 430-137.000.
Oritani, Atsushi, 4,455,627, Cl. 365-226.000.
Sakurai, Junji, 4,455,566, Cl. 357-41.000.
Suzuki, Yasuo; and Nagasawa, Masanori, 4,455,629, Cl. 365-230.000.
Yabu, Takashi; and Kanazawa, Masao, 4,455,194, Cl. 156-653.000.
Fukahori, Hidehiko: *See—*
Iwashita, Tomonori; Watanabe, Yoshitaka; and Fukahori, Hidehiko, 4,455,075, Cl. 354-173.100.
Fukami, Akira: *See—*
Mizuno, Junzi; Fukami, Akira; Okamoto, Kunio; and Ishii, Takeshi, 4,454,849, Cl. 123-519.000.
Fukatsu, Shunzo: *See—*
Umezawa, Hamao; Umezawa, Sumio; Ishido, Yoshiharu; and Fukatsu, Shunzo, 4,455,419, Cl. 536-13.800.
Fukui, Toyoaki: *See—*
Morishita, Mitsuharu; Kobayashi, Hiroyuki; and Fukui, Toyoaki, 4,455,525, Cl. 322-28.000.
Fukuroi, Akio, to Yoshida Kogyo K.K. Beam for use in treatment of textile strips with treatment liquid. 4,454,733, Cl. 68-198.000.
Fulton, Donald E.; Curtiss, William P.; and Fejes, William T., Jr., to Imec Corporation. Self-starting transducerless, brushless D.C. motor controller. 4,455,513, Cl. 318-138.000.
Funabashi, Masayuki; and Kokubu, Yoshikazu, to Kureha Kagaku Kogyo Kabushiki Kaisha. Shaped article of collagen and process for preparing same. 4,455,206, Cl. 204-181.00F.
Furushima, Nobumasa: *See—*
Inamura, Kiyonari; Ueda, Yasuo; Furushima, Nobumasa; and Shigaki, Keisuke, 4,455,609, Cl. 364-414.000.
Furusho, Hidetaka, to Alps Electric Co., Ltd. Brushless motor. 4,455,516, Cl. 318-254.000.
G. Siempelkamp GmbH & Co.: *See—*
Ufermann, Werner, 4,454,940, Cl. 198-374.000.
Galen, Peter M.; and Wilken, Kent D., to Hewlett-Packard Company. Real time fault tolerant error correction mechanism. 4,455,655, Cl. 371-38.000.
Gallo, Joseph S. Watering indicator for hanging plants. 4,454,831, Cl. 116-200.000.
Gamperl, Josef: *See—*
Frohlich, Johann L.; Gamperl, Josef; Hanak, Peter; and Wawra, Gerhard, 4,454,912, Cl. 166-53.000.
Garner, John N., to Northern Telecom Limited. Fluidized power filling of cable core units. 4,455,326, Cl. 427-117.000.
Garrettson, Garrett A.: *See—*
Boyden, James H.; Bradbury, Donald R.; Garrettson, Garrett A.; Groves, Timothy R.; Hanlon, Lawrence R.; and Neukermans, Armand P., 4,455,561, Cl. 346-140.00R.
Garvert, Robert M., to Phillips Petroleum Company. Reformer control. 4,455,279, Cl. 422-62.000.
Gaskell, Lionel A.: *See—*
Schoenheimer, Marcus F.; Gaskell, Lionel A.; and Ackermann, Keith A., 4,454,890, Cl. 137-62.000.
Gasper, Bertram: *See—*
Budich, Wolfgang; Gasper, Bertram; Kurth, Josef; Scharf, Karl-Gunter; and Wissinger, Waldemar, 4,455,398, Cl. 523-220.000.
Gater, Roger A.; and Michelson, Herbert D., to Exxon Research & Engineering Co. Furnace. 4,454,839, Cl. 122-333.000.
Gaudry, Pierre: *See—*
Sibille, Rene ; and Gaudry, Pierre, 4,455,544, Cl. 336-65.000.
Gebr. Happich GmbH: *See—*
Henne, Helmut, 4,455,338, Cl. 428-137.000.
Geeck, Joseph S., III. Power mower with blade-brake clutch. 4,454,706, Cl. 56-11.300.
Gehret, Jean-Claude: *See—*
Gsell, Laurenz; and Gehret, Jean-Claude, 4,455,438, Cl. 564-253.000.
Gendrot, Andre J. C. System of beacons for the transmission of information. 4,455,650, Cl. 370-97.000.
General Can Company, Inc.: *See—*
Zysset, Edgar H., 4,455,114, Cl. 413-14.000.
General Electric Company: *See—*
Coker, Thomas G.; LaConti, Anthony B.; and Balko, Edward N., 4,455,210, Cl. 204-283.000.
Dills, Raymond L., 4,455,467, Cl. 219-10.55E.
Faler, Gary R.; and Campbell, John R., 4,455,409, Cl. 525-351.000.
Giles, Harold F., Jr., 4,455,410, Cl. 525-436.000.
Kim, Bang M., 4,455,236, Cl. 210-721.000.
LeGrand, Donald G.; and Banino, George M., 4,455,170, Cl. 106-97.000.
Lifshin, Eric; Cargioli, Joseph D.; Schroder, Stephen J.; and Wong, Joe, 4,455,181, Cl. 156-150.000.
Lipo, Thomas A., 4,455,522, Cl. 318-809.000.
Musits, Bela L.; and DeSantis, Frank A., 4,455,044, Cl. 294-113.000.
Olson, Daniel R.; and Webb, Karen K., 4,455,205, Cl. 204-159.130.
Prochazka, Svante, 4,455,385, Cl. 501-90.000.
Wahl, Ralph E., 4,454,709, Cl. 57-223.000.
Williams, Frank J., III; and Dellacoletta, Brent A., 4,455,431, Cl. 548-461.000.
General Foods Inc.: *See—*
Maurice, Terrence J.; Murray, Edward D.; and Agnes, Jennifer M., 4,455,318, Cl. 426-104.000.
General Hospital Corporation, The: *See—*
Burton, James, 4,455,303, Cl. 424-177.000.
General Kinematics Corporation: *See—*
Musschoot, Albert, 4,454,906, Cl. 164-34.000.
General Motors Corporation: *See—*
Baxter, William J., 4,455,212, Cl. 204-414.000.
Spann, Chris R., 4,454,801, Cl. 91-375.00A.
General Research of Electronics, Inc.: *See—*
Iguchi, Shozo, 4,455,550, Cl. 340-525.000.
General Signal Corporation: *See—*
Cornwell, William J.; Dudley, Tex M.; and Lee, William H., 4,455,512, Cl. 318-135.000.
Genies, Bernard, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation. Production of refractory linings or walls. 4,455,014, Cl. 266-44.000.
Genth, Hermann: *See—*
Ritter, Helmut; Paulus, Wilfried; Kuhle, Engelbert; and Genth, Hermann, 4,455,309, Cl. 424-250.000.
George, Phillip E., to Specialty Devices, Inc. Low force skeletal adjusting device. 4,454,868, Cl. 128-69.000.
Gerasimov, Vladimir I.: *See—*
Filippov, Vladimir I.; Parshin, Nikolai I.; Barabanov, Igor V.; Marmer, Eduard N.; Puzanov, Alexandr F.; Lobanov, Alexandr B.; Usaty, Jury P.; Gerasimov, Vladimir I.; Tikhonov, Arkady K.; and Turulin, Viktor N., 4,455,177, Cl. 148-155.000.
Gerhardy, Reinhard, to Andreas Stihl, Firma. Carburetor for internal combustion engines, especially very small portable engines. 4,455,266, Cl. 261-35.000.
Gernez, Alain, to Societe Anonyme dite: Compagnie Europeenne pour l'Equipement Menager "CEPEM". Apparatus for electrostatically depositing powder in several different layers on objects. 4,454,832, Cl. 118-634.000.
Gesellschaft fur digitale Automation mbH: *See—*
Richter, Hans, 4,455,120, Cl. 414-719.000.
Getman, Galina A.: *See—*
Portnyagina, Vera A.; Karp, Valentina K.; Jarkova, Irina S.; Trinus, Fedor P.; Mokhort, Nikolai A.; Fadeicheva, Alexandra G.; Kozhushko, Galina I.; Ryabukha, Tatyana K.; Panteleimonov, Alexandr G.; Kljushin, Viktor V.; Dobrovolsky, Jury N.; Kirichek, Larisa M.; Medvedovsky, Adolf A.; Getman, Galina A.; Usenko, Jury D.; Sidelnikov, Viktor M.; Danilevsky, Nikolai F.; and Solsky, Yakov P., 4,455,312, Cl. 424-251.000.
Giardini, Dante S.; and Foote, Lawrence R., to Ford Motor Company. Starting apparatus for internal combustion engines. 4,455,490, Cl. 290-38.00A.

Giebmanns, Karl-Heinz, to ITM International Tool Machines, Inc. Clamping arrangement. 4,454,689, Cl. 51-217.00R.

Giese, Ralf: *See*—
Rest, Heinz; and Giese, Ralf, 4,454,688, Cl. 49-502.000.

Giles, Harold F., Jr., to General Electric Company. Polyetherimide-polysulfide blends. 4,455,410, Cl. 525-436.000.

Gillig, Steven F., to Motorola, Inc. Multi-state control circuitry. 4,455,534, Cl. 330-51.000.

Gilvydis, Jaunutis B., to United States of America, Army. Ammunition storage and weapon loading system. 4,454,799, Cl. 89-47.000.

Giorgetti, Aldo, to Pier Francesco Talenti. Automatic device for quick heating of liquids, particularly water. 4,455,475, Cl. 219-306.000.

Girgis, Adly A.; and Brown, Robert G., to Iowa State University Research Foundation, Inc. Recursive estimation in digital distance relaying system. 4,455,612, Cl. 364-483.000.

Glabe, Elmer F.; Anderson, Perry W.; and Laftsidis, Stergios, to Food Technology Products. Potato snacks and method of preparation. 4,455,321, Cl. 426-549.000.

Glenister, Bryan J., to Scapa Fab, Inc. Attachment assembly for mounting an insulating blanket on a dryer cylinder. 4,454,660, Cl. 34-41.000.

Goehler, Robert F.; Addleman, Jeffrey L.; and Rotz, Dana R., to Ingersoll-Rand Company. Vibratory mechanism. 4,454,780, Cl. 74-87.000.

Gold, Philip, to Cordis Corporation. Cardiac pacing lead with curve retainer. 4,454,888, Cl. 128-785.000.

Goller, Ernst; Kazmaier, Gunther; and Schmodde, Hermann, to H. Stoll GmbH & Co. Knitted fabric spreader device for flat knitting machines. 4,454,731, Cl. 66-149.00R.

Golob, Deborah L.: *See*—
Wylegala, Kenneth B.; Fischer, James R.; Long, Franklin A.; and Golob, Deborah L., 4,455,252, Cl. 252-186.260.

Gombas, Laszlo A. Bottom roll-forming method and apparatus and resultant can end configuration. 4,454,742, Cl. 72-115.000.

Goodman, Alvin M.; and Martinelli, Ramon U., to RCA Corporation. Vertical MOSFET with an aligned gate electrode and aligned drain shield electrode. 4,455,565, Cl. 357-23.400.

Goodman, John T.: *See*—
Graham, Teresita O.; and Goodman, John T., 4,455,358, Cl. 429-190.000.

Goodman, Ronald K.; and Hunt, Angus L., to United States of America, Energy. Electrically charged targets. 4,455,276, Cl. 376-152.000.

Goodyear Tire & Rubber Company, The: *See*—
Noel, Daniel R. F.; and Florence, Alain F., 4,454,903, Cl. 152-361.0DM.

Gordon, Marvin; Lichtenstein, Joseph; and Kocanowski, Stephen, to Whitman Medical Corporation. Intravenous liquid leveling device. 4,455,139, Cl. 604-247.000.

Gorog, Istvan, to RCA Corporation. Method for evaluating distortions in video disc recordings. 4,455,633, Cl. 369-53.000.

Gotoh, Osamu; and Otobe, Yutaka, to Honda Motor Co., Ltd. Exhaust gas recirculation control method for internal combustion engines for vehicles. 4,454,854, Cl. 123-571.000.

Gould, Corby J.: *See*—
Harms, Harold H., II; and Gould, Corby J., 4,455,227, Cl. 210-184.000.

Gould Inc.: *See*—
Shoemaker, William E., 4,455,613, Cl. 364-487.000.

Graham, Teresita O.; and Goodman, John T., to Duracell Inc. Electrochemical cells having a gelled anode-electrolyte mixture. 4,455,358, Cl. 429-190.000.

Graillat, Gerard; Pradier, Serge; and Salomon, Georges P. J., to Etablissements Francois Salomon & Fils S.A. Ski boot having lateral rigidifying means. 4,454,663, Cl. 36-120.000.

Grandclement, Gerard, to Innovation Technique. Heating assembly for heating an area of a thermoplastic pipe. 4,455,482, Cl. 219-551.000.

Greco, Norman A.; and Arkoff, Simon Z., to Hughes Aircraft Company. Double wedge termination device for coupled cavity traveling wave tubes. 4,455,507, Cl. 315-3.500.

Greenley, Gordon A.: *See*—
Haag, George A.; Fogg, O. Douglas; Greenley, Gordon A.; Shepard, Steve A.; and Terry, F. Duncan, 4,455,624, Cl. 364-900.000.

Greenspan, Donald J. Insertable dispenser. 4,454,962, Cl. 221-288.000.

Gregory, Clifton; and Campbell, Lester W., to Marvel Specialty Company. Interrupter apparatus for hosiery knitting machine. 4,454,730, Cl. 66-149.00S.

Gregory, Don A.; and Stocks, Charles D., to United States of America, National Aeronautics and Space Administration. Apparatus for measuring charged particle beam. 4,455,532, Cl. 324-457.000.

Greiner, Garry C.; and Shelley, Joe A., Jr., to Sargent & Greenleaf, Inc. Combination locks with electro-optical silent alarm system. 4,455,552, Cl. 340-543.000.

Grenier, Wilfred J., to Shea, Raymond E. Fluid friction heater. 4,454,861, Cl. 126-247.000.

Griffin, Daniel J.: *See*—
Walden, Jack M.; Eads, William D.; Cozzens, Ray J.; Bidwell, John L.; Jewett, Robert A.; Wilson, Martin S.; Griffin, Daniel J.; Kuseski, Robert E.; and Schulte, Louis T., 4,455,618, Cl. 364-900.000.

Griffin, Gaylon D.: *See*—
Bowen, Brenda R.; and Griffin, Gaylon D., 4,453,093, Cl. 368-10.000.

Grimm, Gary E.: *See*—
Lee, Joseph Y. M.; and Grimm, Gary E., 4,455,567, Cl. 357-51.000.

Griscom, Robert E.; and Stranko, Thomas A., to International Business Machines Corporation. Cross checking among service processors in a multiprocessor system. 4,455,601, Cl. 364-200.000.

Grode, Gerald A., to Baxter Travenol Laboratories, Inc. Storage of blood platelets. 4,455,299, Cl. 424-101.000.

Groteke, Daniel E., to Groteke, Daniel E. Apparatus and method for filtration of a molten metal stream. 4,455,238, Cl. 210-773.000.

Groves, Timothy R.: *See*—
Boyden, James H.; Bradbury, Donald R.; Garrettson, Garrett A.; Groves, Timothy R.; Hanlon, Lawrence R.; and Neukermans, Armand P., 4,455,561, Cl. 346-140.00R.

Grudowski, Raymond A.: *See*—
Pelley, Michael S.; Rohn, David R.; Komarek, Lawrence A.; and Grudowski, Raymond A., 4,455,621, Cl. 364-900.000.

Gruner, Ronald H.: *See*—
Ahlstrom, John K.; Bachman, Brett; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr; and Well, Douglas M., 4,455,604, Cl. 364-200.000.

Gsell, Laurenz; and Gehret, Jean-Claude, to Ciba-Geigy Corporation. Cyclobutanone oximes. 4,455,438, Cl. 564-253.000.

GTE Business Communication Systems Inc.: *See*—
Little, Richard E., 4,455,455, Cl. 179-7.10R.

GTE Products Corporation: *See*—
Ayyagari, Murthy S.; Schrank, Martin P.; and Coppola, Richard M., 4,455,506, Cl. 313-506.000.

Gueldner, Enrique, to Siemens Corporation. Apparatus for establishing multi-address connections. 4,455,647, Cl. 370-62.000.

Guelpa, Jean. Power unit for motor vehicle utilizing a thermal engine down to the lowest running speeds. 4,455,492, Cl. 290-45.000.

Guhne, Wieland: *See*—
Simm, Hans-Peter; Guhne, Wieland; Hoesch, Christoph; and Friedrichs, Renate, 4,454,627, Cl. 15-377.000.

Guibert, Raul, to Sunset Ltd. Portable unit for heating packaged food. 4,455,478, Cl. 219-400.000.

Guidry, Shelby L.; and Jernigan, Kerry D., to Schlumberger Technology Corporation. Safety valve system with retrievable equalizing feature. 4,454,913, Cl. 166-117.500.

Guillemin, Claude; Lissot, Jean; and Vasseur, Jean-Pierre, to Prolabo. Device for column chromatography apparatus. 4,454,749, Cl. 73-23.100.

Gulf Oil Corporation: *See*—
York, Earl D.; and Knepper, Jay C., 4,454,915, Cl. 166-259.000.

Gunther, Paul, to Erich Salzle. Process and an apparatus for extracting fine droplets of paint from paint-spraying units. 4,455,332, Cl. 427-421.000.

Gupta, Krishna M., to Porous Materials, Inc. Remotely controlled valve. 4,455,012, Cl. 251-134.000.

Gurries, Raymond A.; and Stormon, Harry J., to Resonant Technology Company. Resonance aided front end loader. 4,454,666, Cl. 37-118.00R.

Gustafsson, John H.; and Froberg, Tord E. H., to Ifo Sanitar AB. Valve arrangement for water toilets. 4,454,614, Cl. 4-366.000.

Gutierrez, Antonio; Brownawell, Darrel W.; Portnoy, Robert C.; and Brois, Stanley J., to Exxon Research & Engineering Co. Oxazolines of 2-(alkylthio)succinic acids as an additive for drilling muds. 4,455,429, Cl. 548-239.000.

Gutleber, Frank S. Noise code generator and pulse compression communications system. 4,455,662, Cl. 375-25.000.

Gutzler, Marc H.: *See*—
Oswald, Norman D.; Franklin, Carl M.; Gutzler, Marc H.; and Mankey, Harry S., 4,454,925, Cl. 180-22.000.

Guyette, Richard R.: *See*—
Cormier, Roger L.; Dugan, Robert J.; Guyette, Richard R.; Wanish, Paul J.; and Zeitler, Carl, Jr., 4,455,605, Cl. 364-200.000.

Gwyn, John E.: *See*—
Parker, Wesley A.; Dewitz, Thomas S.; Hinds, George P., Jr.; Gwyn, John E.; Bilgic, A. Haluk; and Hardesty, Donald E., 4,455,220, Cl. 208-161.000.

H. Stoll GmbH & Co.: *See*—
Goller, Ernst; Kazmaier, Gunther; and Schmodde, Hermann, 4,454,731, Cl. 66-149.00R.

Haag, George A.; Fogg, O. Douglas; Greenley, Gordon A.; Shepard, Steve A.; and Terry, F. Duncan, to Hewlett-Packard Company. Logic state analyzer with format specification. 4,455,624, Cl. 364-900.000.

Haarmann & Reimer GmbH: *See*—
Hopp, Rudolf; Finkelmeier, Horst; and Langner, Roland, 4,455,295, Cl. 424-60.000.

Haas, Franz, Sr.; Hass, Franz, Jr.; and Hass, Johann. Installation for the coating of individual wafer sheets or the like with a spreading mass. 4,454,834, Cl. 118-676.000.

Haas, Lothar: *See*—
Wesemeyer, Jurgen; Haas, Lothar; and Haubner, Georg, 4,455,623, Cl. 364-900.000.

Haas, Rudy E.; Smorol, Michael E.; Tobin, Curtis L.; and Walker, James J., Jr., to Carrier Corporation. Method of assembling a heating exchanger. 4,454,641, Cl. 29-157.30R.

Habeger, Donald, to Automatic Toll Systems, Inc. Treadle assembly with plural replaceable treadle switches. 4,455,465, Cl. 200-86.00R.

Hackenberg, Dieter, to Octanorm-Vertriebs-GmbH fur Bauelemente. Framework comprising separably connected profile bars. 4,455,103, Cl. 403-190.000.

Haden, Denis H., to D. H. Haden Limited. Electric kettle with independently detachable subassemblies. 4,455,476, Cl. 219-328.000.

Haeffele, Steven M.: *See*—
Baxter, Ward, III; Coder, William N.; and Haeffele, Steven M., 4,455,602, Cl. 364-200.000.

Hagiwara, Yoshimune: *See*—
Masuhara, Toshiaki; Minato, Osamu; Shimohigashi, Katsuhiro; Masuda, Hiroo; Sunami, Hideo; Sakai, Yoshio; Kamigaki, Yoshiaki; Takeda, Eiji; and Hagiwara, Yoshimune, 4,455,495, Cl. 307-44.000.

Haglund, Lennart; and Johansson, Sigvard, to AB Stil-Industri. Safety belt buckle. 4,454,634, Cl. 24-636.000.

Hahn, Alfred; Boegl, Manfred; and Rauch, Werner, to Siemens Aktiengesellschaft. Cassette holder for an x-ray examination apparatus. 4,455,672, Cl. 378-181.000.

Haldeman, Janice L., to Firestone Tire & Rubber Company, The. Stabilizer for low ammonia natural rubber latex compounds. 4,455,265, Cl. 524-145.000.

Hall, John A.: *See*—
Alger, Richard N.; and Hall, John A., 4,455,115, Cl. 414-21.000.

Hall, William E.: *See*—
Brownell, George L.; Collier, Melba; Hall, William E.; Morgan, Howard H., Jr.; and Snyder, Arthur R., 4,455,446, Cl. 585-850.000.

Halliburton Company: *See*—
Chatterji, Jiten; and Brake, Bobby G., 4,455,169, Cl. 106-93.000.

Halmsay, Lawrence G., Sr. Mechanism for a newspaper delivery box for indicating delivery of a rolled newspaper. 4,454,981, Cl. 232-1.00C.

Hamada, Yukinori: *See*—
Watanabe, Masakatu; Hamada, Yukinori; and Chiwaki, Ryuichi, 4,455,620, Cl. 364-900.000.

Hamamatsu Systems Inc.: *See*—
Allemand, Charly D.; and Brewer, David L., 4,455,087, Cl. 356-333.000.

Hanada, Masamichi; and Terada, Hirokiyo, to Hitachi, Ltd. Air conditioning system. 4,454,728, Cl. 62-324.100.

Hanak, Peter: *See*—
Frohlich, Johann L.; Gamperl, Josef; Hanak, Peter; and Wawra, Gerhard, 4,454,912, Cl. 166-53.000.

Handa, Ryoji; Hosoda, Jun; Ariyama, Kenzo; Okushima, Osamu; and Kurashige, Nobuo, to Nitto Kagaku Kogyo Kabushiki Kaisha; Mitsubishi Rayon Co., Ltd.; and Diafloc Co., Ltd. Process for preparing acrylamide polymers. 4,455,411, Cl. 526-208.000.

Hangos, Russell A.: *See*—
Finnerty, Suja P.; and Hangos, Russell A., 4,455,377, Cl. 436-69.000.

Hanlon, Lawrence R.: *See*—
Boyden, James H.; Bradbury, Donald R.; Garrettson, Garrett A.; Groves, Timothy R.; Hanlon, Lawrence R.; and Neukermans, Armand P., 4,455,561, Cl. 346-140.00R.

Hansen, Eric J.; Kettman, John R.; and Robertson, Stella M., to Board of Regents, the University of Texas System. Hybrid cell lines producing monoclonal antibodies directed against *Haemophilus influenzae*. 4,455,296, Cl. 424-87.000.

Hansen, Jens R. Hydrogen generator. 4,455,152, Cl. 48-61.000.

Hanson, Richard E.: *See*—
Engel, Joseph C.; Hanson, Richard E.; Simms, Kenneth W.; and Spreadbury, Robert J., 4,455,595, Cl. 362-265.000.

Hara, Hiroshi: *See*—
Naito, Hideki; Hara, Hiroshi; and Yagihara, Morio, 4,455,363, Cl. 430-203.000.

Harada, Tatsuo: *See*—
Hosaka, Sumio; Harada, Tatsuo; and Takanashi, Akihiro, 4,455,485, Cl. 250-234.000.

Hardesty, Donald E.: *See*—
Parker, Wesley A.; Dewitz, Thomas S.; Hinds, George P., Jr.; Gwyn, John E.; Bilgic, A. Haluk; and Hardesty, Donald E., 4,455,220, Cl. 208-161.000.

Hardy Brothers (Alnwick) Limited: *See*—
Humble, Raymond, 4,454,676, Cl. 43-24.000.

Harms, Harold H., II; and Gould, Corby J., to Harmsco, Inc. Combination filter heat exchanger. 4,455,227, Cl. 210-184.000.

Harmsco, Inc.: *See*—
Harms, Harold H., II; and Gould, Corby J., 4,455,227, Cl. 210-184.000.

Harner, Donald R.; Kaley, Robert C.; and Crawford, Christopher L., to AMP Incorporated. Electrical connector for flat cable. 4,455,058, Cl. 339-99.00R.

Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., to Allied Corporation. Producing modified high performance polyolefin fiber. 4,455,273, Cl. 264-184.000.

Harris, Jeffrey L.: *See*—
Matta, Joseph E.; and Harris, Jeffrey L., 4,454,751, Cl. 73-56.000.

Harris, John E. Exerciser for finger, hand, wrist and forearm. 4,455,019, Cl. 272-67.000.

Hartco Company: *See*—
Pearson, Kenneth C., 4,454,636, Cl. 24-347.000.

Harteman, Evert, to Akzo nv. Sized multifilament yarn of an aromatic polyamide, a yarn package, a woven fabric and a process for making said yarn. 4,455,341, Cl. 428-225.000.

Harvey, Kenneth; and Connors, Stephen T., to Colgate-Palmolive Company. Stable dentifrice containing neutral siliceous polishing agent. 4,455,293, Cl. 424-52.000.

Harvey, Kenneth; and Connors, Stephen T., to Colgate-Palmolive Company. Stable dentifrice containing acidic siliceous polishing agent. 4,455,294, Cl. 424-52.000.

Hasegawa, Shinichi: *See*—
Chiyoda, Tsutomu; Nakamura, Makoto; and Hasegawa, Shinichi, 4,455,440, Cl. 568-565.000.

Hasegawa, Shumpei, to Honda Motor Co., Ltd. Electronic fuel injection control system for internal combustion engines having exhaust gas recirculation control devices. 4,454,852, Cl. 123-568.000.

Hasegawa, Shumpei, to Honda Motor Co., Ltd. Electronic fuel injection control system for internal combustion engines having exhaust gas recirculation devices. 4,454,853, Cl. 123-571.000.

Hasegawa, Yoshio: *See*—
Yajima, Seishi; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamamura, Takemi, 4,455,414, Cl. 528-30.000.

Hashimoto, Seiji; and Tanaka, Nobuyoshi, to Canon Kabushiki Kaisha. Image pickup device. 4,455,574, Cl. 358-213.000.

Hass, Franz, Jr.: *See*—
Haas, Franz, Sr.; Hass, Franz, Jr.; and Hass, Johann, 4,454,834, Cl. 118-676.000.

Hass, Johann: *See*—
Haas, Franz, Sr.; Hass, Franz, Jr.; and Hass, Johann, 4,454,834, Cl. 118-676.000.

Haubner, Georg: *See*—
Wesemeyer, Jurgen; Haas, Lothar; and Haubner, Georg, 4,455,623, Cl. 364-900.000.

Hayashi, Seiji: *See*—
Murakami, Kenji; and Hayashi, Seiji, 4,455,547, Cl. 338-308.000.

Hayes, Leonard L., to Coe Manufacturing Company, The. Veneer lathe drive with powered rolls. 4,454,900, Cl. 144-213.000.

Hecker, Richard L.: *See*—
Mann, Irwin; and Hecker, Richard L., 4,454,871, Cl. 128-80.00H.

Heckler & Koch GmbH: *See*—
Meidel, Herbert, 4,454,673, Cl. 42-70.00F.

Heiland, Gerhard; and Laurs, Heinz, to Dragerwerk Aktiengesellschaft. Method of determining the content of an anesthetic gas in a selected location. 4,455,378, Cl. 436-126.000.

Heinke, Harry: *See*—
Aldinger, Fritz; Heinke, Harry; Schreiber, Franz; and Werdecker, Waltraud, 4,454,977, Cl. 228-131.000.

Heinrichs, Bernhard: *See*—
Schmid, Karl; and Heinrichs, Bernhard, 4,454,959, Cl. 220-400.000.

Heisler, Raymond A. Bail attaching apparatus. 4,454,895, Cl. 140-93.00B.

Heitmann, Jurgen, to Robert Bosch GmbH. Digital signal magnetic recording system. 4,455,584, Cl. 360-108.000.

Helix Technology Corporation: *See*—
Bartlett, Allen J.; and Lewis, Robert M., 4,454,722, Cl. 62-55.500.

Henne, Helmut, to Gebr. Happich GmbH. Reinforced foam body for vehicle dashboards, or the like. 4,455,338, Cl. 428-137.000.

Henning Berlin GmbH Chemie- und Pharmawerk: *See*—
Rokos, Hartmut, 4,455,305, Cl. 424-226.000.

Henriot, Marie C.; and Janer, Patrick, to Thomson-CSF. Band pass filter with linear resonators open at both their extremities. 4,455,540, Cl. 333-202.000.

Henry Ford Hospital: *See*—
Reddy, Daniel J., 4,454,885, Cl. 128-707.000.

Henry, Thomas J. Draw length indicator for hunting bow. 4,454,858, Cl. 124-88.000.

Henry, Walter B.; McNeely, John F.; and Owen, Harrold D., to Pengo Industries, Inc. Select-fire systems and methods for perforating guns. 4,454,814, Cl. 102-200.000.

Herd, Richard S.; and Landis, Phillip S., to Mobil Oil Corporation. Reducing the cloud point of hydrodewaxed base stocks. 4,455,242, Cl. 252-40.700.

Hermann, Manfred P., to J V Kunststoffwerk GmbH. Electrode frame for the electrolytic recovery of metals. 4,455,209, Cl. 204-279.000.

Herrmann, Henry O., Jr.; and Ney, Reuben E., to AMP Incorporated. Multi-pin high voltage connector. 4,455,056, Cl. 339-91.00R.

Herrmann, Ludwig: *See*—
Krauss, Theo; Herrmann, Ludwig; and Minde, Siegfried, 4,454,668, Cl. 38-11.000.

Hester, Jackson B., Jr., to Upjohn Company, The. Antihypertensive use of triazolobenzodiazepines. 4,455,307, Cl. 424-246.000.

Hewlett-Packard Company: *See*—
Boyden, James H.; Bradbury, Donald R.; Garrettson, Garrett A.; Groves, Timothy R.; Hanlon, Lawrence R.; and Neukermans, Armand P., 4,455,561, Cl. 346-140.00R.
Galen, Peter M.; and Wilken, Kent D., 4,455,655, Cl. 371-38.000.
Haag, George A.; Fogg, O. Douglas; Greenley, Gordon A.; Shepard, Steve A.; and Terry, F. Duncan, 4,455,624, Cl. 364-900.000.
Walden, Jack M.; Eads, William D.; Cozzens, Ray J.; Bidwell, John L.; Jewett, Robert A.; Wilson, Martin S.; Griffin, Daniel J.; Kuseski, Robert E. and Schulte, Louis T., 4,455,618, Cl. 364-900.000.
Watson, Robert E.; Walden, Jack M.; and Near, Charles W., 4,455,607, Cl. 364-200.000.

Hexcel Corporation: *See*—
Laufenberg, Carol J.; and Custer, Milton F., 4,454,873, Cl. 128-90.000.

Hibino, Yozo; Kamejima, Kohji; and Nara, Yasuaki, to Hitachi, Ltd. Control device of absorption type cold and warm water system. 4,454,726, Cl. 62-148.000.

Hickam, William M.: *See*—
Lee, Pang-Kai; Hickam, William M.; and Lindsay, William T., Jr., 4,455,530, Cl. 324-446.000.

Hicks, Sonja L. Aerosol dispenser case. 4,454,966, Cl. 222-153.000.

HID Systems, Inc.: *See*—
Lesko, Robert J., 4,455,510, Cl. 315-263.000.

Higgins, Irving J., to Imperial Chemical Industries PLC. Microbiological oxidations. 4,455,373, Cl. 435-132.000.

Hilbig, Reinhard, to VFW. Supercritical air-foil profile. 4,455,003, Cl. 244-35.00R.
Hillman, Arthur E.; and Painley, Robert J., to Corning Glass Works. Method of fabricating a sintered and selectively plugged honeycomb structure. 4,455,180, Cl. 156-89.000.
Hinds, George P., Jr.: *See*—
Parker, Wesley A.; Dewitz, Thomas S.; Hinds, George P., Jr.; Gwyn, John E.; Bilgic, A. Haluk; and Hardesty, Donald E., 4,455,220, Cl. 208-161.000.
Hinkel, Jerald J.: *See*—
Settineri, William J.; Charles, John G.; Hinkel, Jerald J.; and Malone, Bradley P., 4,455,175, Cl. 134-5.000.
Hinrichs, Richard J.; and Thuen, Judy M., to Applied Polymer Technology, Inc. Control system for processing composite materials. 4,455,268, Cl. 264-23.000.
Hinson, Richard A.: *See*—
Richardson, Edwin A.; and Hinson, Richard A., 4,454,918, Cl. 166-303.000.
Hira, Rikuo: *See*—
Ichikawa, Tetsuo; Akiyama, Osamu; Hira, Rikuo; and Nishimura, Takashi, 4,455,097, Cl. 356-323.000.
Hirano, Makoto: *See*—
Ikenoya, Yasuo; Hirano, Makoto; and Miura, Seishi, 4,454,714, Cl. 60-293.000.
Hirano, Tsumoru; Umemoto, Makoto; and Yagihara, Morio, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,455,366, Cl. 430-381.000.
Hirata, Michitoshi: *See*—
Yamaguchi, Tadashi; Ono, Takayuki; Hirata, Michitoshi; and Yokoyama, Toshihiko, 4,455,179, Cl. 149-109.600.
Hiroyasu, Makoto: *See*—
Sakitani, Katsumi; Maekawa, Takashi; Fujimoto, Satoru; Tajima, Tetsuro; and Hiroyasu, Makoto, 4,455,129, Cl. 418-82.000.
Hisamitsu Pharmaceutical Co., Ltd.: *See*—
Noda, Kanji; Nakagawa, Akira; Yamagata, Tetsuya; Kobayasi, Masasi; Suenaga, Tadayoshi; Tokubuchi, Fumiaki; Noguchi, Kazuki; Yoshitake, Tadaaki; Tsuji, Masayoshi; and Ide, Hiroyuki, 4,455,146, Cl. 604-897.000.
Hisey, Robert W.: *See*—
Lindstedt, Ernst L.; and Hisey, Robert W., 4,455,116, Cl. 414-22.000.
Hitachi, Ltd.: *See*—
Hanada, Masamichi; and Terada, Hirokiyo, 4,454,728, Cl. 62-324.100.
Hibino, Yozo; Kamejima, Kohji; and Nara, Yasuaki, 4,454,726, Cl. 62-148.000.
Hosaka, Sumio; Harada, Tatsuo; and Takanashi, Akihiro, 4,455,485, Cl. 250-234.000.
Kodama, Hideyo; Niyama, Eisuke; Endo, Munehiro; and Kimura, Tomoaki, 4,454,908, Cl. 164-454.000.
Masuhara, Toshiaki; Minato, Osamu; Shimohigashi, Katsuhiro; Masuda, Hiroo; Sunami, Hideo; Sakai, Yoshio; Kamigaki, Yoshiaki; Takeda, Eiji; and Hagiwara, Yoshimune, 4,455,495, Cl. 307-44.000.
Masui, Shoichi; Oonari, Mikihiko; Yamanaka, Kunio; and Takaki, Masaoki, 4,455,619, Cl. 364-900.000.
Mijioka, Yoshiaki; Yamamoto, Kouichi; Suzuki, Taihei; and Mukaemachi, Takuji, 4,455,645, Cl. 370-16.000.
Sasaki, Ken; Matsuyama, Sigeru; Yoshino, Tsunehiro; and Miyazaki, Katuhiro, 4,455,185, Cl. 156-250.000.
Sasaki, Makoto; Takatsu, Haruyoshi; Sato, Hisato; Shimamura, Tuneo; Toriyama, Kazuhisa; and Nakagomi, Tamihito, 4,455,261, Cl. 260-465.00D.
Shimazoe, Michitaka; and Matsuoka, Yoshitaka, 4,454,771, Cl. 73-862.680.
Takahashi, Kenji; Nagahara, Shusaku; Izumita, Morishi; Sato, Kazuhiro; Akiyama, Toshiyuki; and Ozawa, Naoki, 4,455,569, Cl. 358-51.000.
Tamura, Kaoru; and Aizawa, Hidetoshi, 4,455,599, Cl. 363-138.000.
Tanaka, Toshio; Nakagawa, Sumio; and Toudo, Kenzi, 4,455,656, Cl. 371-57.000.
Hizuka, Kenji: *See*—
Inui, Tsuneo; Kuroda, Hitoshi; Hizuka, Kenji; Kunishige, Fumio; and Kondo, Yoshikazu, 4,455,355, Cl. 428-595.000.
Hoechst Aktiengesellschaft: *See*—
Arnold, Dieter; Bartels, Jorg; Lenzmann, Heinrich; Jacobsen, Gunter; Wendt, Heinz; and Stoltenberg, Manfred, 4,455,439, Cl. 568-302.000.
Ramspeck, Wolfgang; and Sittig, Wolfgang, 4,455,156, Cl. 55-52.000.
Hoesch, Christoph: *See*—
Simm, Hans-Peter; Guhne, Wieland; Hoesch, Christoph; and Friedrichs, Renate, 4,454,627, Cl. 15-377.000.
Hoffmann-La Roche Inc.: *See*—
Kazlauskas, Rymantas, 4,455,420, Cl. 536-24.000.
Kienzle, Frank, 4,455,311, Cl. 424-251.000.
Hoftiezer, Henry W.; Watts, Daniel J.; and Takahashi, Akio, to Reed Lignin, Inc. Cationic reaction product of kraft lignin with aldehyde and polyamine. 4,455,257, Cl. 260-124.00R.
Holland, Frank S., to Manchem Limited. Apparatus for electrolysis using two electrolytically conducting phases. 4,455,208, Cl. 204-261.000.
Holland, James F.: *See*—
Bekesi, Julius G.; Holland, James F.; and Tsang, Peter H., 4,455,379, Cl. 436-504.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Ikenoya, Yasuo; Hirano, Makoto; and Miura, Seishi, 4,454,714, Cl. 60-293.000.
Kajikawa, Tsuneo, 4,455,032, Cl. 280-276.000.
Shinozaki, Takashi; and Suzuki, Masatoshi, 4,454,719, Cl. 60-605.000.
Honda Motor Co., Ltd.: *See*—
Gotoh, Osamu; and Otobe, Yutaka, 4,454,854, Cl. 123-571.000.
Hasegawa, Shumpei, 4,454,852, Cl. 123-568.000.
Hasegawa, Shumpei, 4,454,853, Cl. 123-571.000.
Otobe, Yutaka; and Kishi, Noriyuki, 4,454,855, Cl. 123-571.000.
Honerkamp, Joseph D.; and Ebeling, Harold O., to Latoka Engineering, Inc. Absorber for dehydrating gas. 4,455,157, Cl. 55-234.000.
Honeywell Inc.: *See*—
Lutes, Olin S., 4,455,626, Cl. 365-158.000.
Honeywell Information Systems Inc.: *See*—
Cushing, David E.; Lemay, Richard A.; Stanley, Philip E.; and Woods, William E., 4,455,606, Cl. 364-200.000.
Hong, Charles A.; and Brabbs, William J., to Procter & Gamble Company, The. Doughs and cookies providing storage-stable texture variability. 4,455,333, Cl. 426-94.000.
Hoogenboom, Aloysius J., to Flowdrill B.V. Flow drill for the provision of holes in sheet material. 4,454,741, Cl. 72-71.000.
Hopp, Rudolf; Finkelmeier, Horst; and Langner, Roland, to Haarmann & Reimer GmbH. N-(p-Sulfophenyl) cinnamamide as sunscreen agent. 4,455,295, Cl. 424-60.000.
Hoppmann Corporation: *See*—
Hoppmann, Kurt H.; Lin, James G.; and Hoppmann, Peter G., 4,455,067, Cl. 353-69.000.
Hoppmann, Kurt H.; Lin, James G.; and Hoppmann, Peter G., to Hoppmann Corporation. Method of modifying slide transparencies so as to provide uniform illumination in angular projection. 4,455,067, Cl. 353-69.000.
Hoppmann, Peter G.: *See*—
Hoppmann, Kurt H.; Lin, James G.; and Hoppmann, Peter G., 4,455,067, Cl. 353-69.000.
Horn, Gerhardt: *See*—
Bussemeier, Bernd; Frohning, Carl D.; Horn, Gerhardt; and Kluy, Werner, 4,455,395, Cl. 518-717.000.
Horn and Gladden Lint Cleaner Co., Inc.: *See*—
Schwartz, Robert C., 4,454,631, Cl. 19-0.200.
Horner, Michael; Irgang, Matthias; and Nissen, Axel, to BASF Aktiengesellschaft. Preparation of unsaturated alcohols. 4,455,442, Cl. 568-875.000.
Horney, James R., to Black & Decker Inc. Method of producing a composite washer assembly. 4,455,274, Cl. 264-262.000.
Hornivius, Lothar: *See*—
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Horvath, Stephen, to Beeston Company Limited. Apparatus and method for energy conversion. 4,454,850, Cl. 123-537.000.
Horwitz, Michael J.: *See*—
Fox, James R.; Horwitz, Michael J.; and Charles, Jay R., 4,455,644, Cl. 370-13.000.
Hosaka, Sumio; Harada, Tatsuo; and Takanashi, Akihiro, to Hitachi, Ltd. Laser beam scanning system. 4,455,485, Cl. 250-234.000.
Hosaka, Wayne N. Wheelchair. 4,455,031, Cl. 280-242.0WC.
Hoshi, Hideo, to Seiko Instruments & Electronics Ltd. Picture display device. 4,455,576, Cl. 358-230.000.
Hosoda, Jun: *See*—
Handa, Ryoji; Hosoda, Jun; Ariyama, Kenzo; Okushima, Osamu; and Kurashige, Nobuo, 4,455,411, Cl. 526-208.000.
Howatt, John R.: *See*—
Sharp, Harper E.; Spiegel, Leo; Masters, Richard M.; Howatt, John R.; and Walker, Gary E., 4,454,756, Cl. 73-151.000.
HS Hydraulic Systems S.r.l.: *See*—
Ciccorelli, Raffaele, 4,454,739, Cl. 72-23.000.
Hsia, Yukun, to McDonnell Douglas Corporation. Method of making integrated MNOS and CMOS devices in a bulk silicon wafer. 4,454,648, Cl. 29-576.00B.
Huang, Tsao K. Screw lock. 4,454,735, Cl. 70-346.000.
Huber, Otto L.; and Magidson, Mark, to Moldex/Metric Products, Inc. Multi-layer face mask with molded edge bead. 4,454,881, Cl. 128-206.150.
Hughes Aircraft Company: *See*—
Greco, Norman A.; and Arkoff, Simon Z., 4,455,507, Cl. 315-3.500.
Lee, Joseph Y. M.; and Grimm, Gary E., 4,455,567, Cl. 357-51.000.
Humble, Raymond, to Hardy Brothers (Alnwick) Limited. Lineguide assembly. 4,454,676, Cl. 43-24.000.
Hunnicutt, Harry A.; and Buckley, James A., to Kelsey Hayes Company. Disc brake. 4,454,933, Cl. 188-71.900.
Hunt, Angus L.: *See*—
Goodman, Ronald K.; and Hunt, Angus L., 4,455,276, Cl. 376-152.000.
Hurlimann, Reinhard; and Zaugg, Paul, to BBC Brown, Boveri & Company, Limited. Constant-pressure air-storage cavern with hydralic pressure compensation for air-storage gas turbine power stations. 4,454,721, Cl. 60-659.000.
Huth, John W. Hanger assembly. 4,454,969, Cl. 223-96.000.
Hydreclaim Corporation: *See*—
Moller, Richard W., 4,454,943, Cl. 198-657.000.
I.W.S. Nominee Company, Limited: *See*—
Lewis, David M.; Brady, Peter R.; Cookson, Peter G.; and Fincher, Keith W., 4,455,147, Cl. 8-471.000.
Ichikawa, Tetsuo; Akiyama, Osamu; Hira, Rikuo; and Nishimura, Takashi, to Shimadzu Corporation. Spectrophotometer. 4,455,097, Cl. 356-323.000.

ICI Australia Limited: *See*—
Lydiate, Jack; and Marchese, Anthony L., 4,455,412, Cl. 526-227.000.
Ide, Hiroyuki: *See*—
Noda, Kanji; Nakagawa, Akira; Yamagata, Tetsuya; Kobayasi, Masasi; Suenaga, Tadayoshi; Tokubuchi, Fumiaki; Noguchi, Kazuki; Yoshitake, Tadaaki; Tsuji, Masayoshi; and Ide, Hiroyuki, 4,455,146, Cl. 604-897.000.
Idemitsu Kosan Company Limited: *See*—
Takematsu, Tetsuo; Kikkawa, Nobuyuki; and Ogawa, Hideaki, 4,455,164, Cl. 71-118.000.
Ifo Sanitar AB: *See*—
Gustafsson, John H.; and Froberg, Tord E. H., 4,454,614, Cl. 4-366.000.
Igarashi, Akira; and Nakamura, Sukenori, to Fuji Photo Film Co., Ltd. Heat-sensitive recording paper. 4,455,346, Cl. 346-200.000.
Iguchi, Shozo, to General Research of Electronics, Inc. Detection circuit for a video intrusion monitoring apparatus. 4,455,550, Cl. 340-525.000.
IIT Research Institute: *See*—
Camras, Marvin, 4,455,581, Cl. 360-31.000.
Iizuka, Syogo: *See*—
Suzuki, Yoshitsugu; Iizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, 4,454,652, Cl. 29-863.000.
Ikeda, Masaomi; and Tsutsumi, Yotaro, to Toyo Seikan Kaisha Ltd. Laminated packing bag with spout formed from handle portion. 4,454,979, Cl. 229-52.00B.
Ikeda, Shoji: *See*—
Sakamoto, Fumio; Ikeda, Shoji; and Tsukamoto, Goro, 4,455,310, Cl. 424-250.000.
Ikeda, Tadashi: *See*—
Kojima, Tetsuro; Ishimaru, Shingo; Sugimoto, Naohiko; and Ikeda, Tadashi, 4,455,368, Cl. 430-507.000.
Ikejima, Hiroyuki: *See*—
Nomura, Masami; and Ikejima, Hiroyuki, 4,454,930, Cl. 187-29.00R.
Ikenoya, Yasuo; Hirano, Makoto; and Miura, Seishi, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust gas cleaning device for internal combustion engines. 4,454,714, Cl. 60-293.000.
Image Graphics, Inc.: *See*—
Tarnowski, Andrew A., 4,455,563, Cl. 346-161.000.
Imai, Masaya: *See*—
Terai, Shiro; Sato, Shiro; Kato, Sakae; Imai, Masaya; Inumaru, Susumu; and Yoshida, Masahiro, 4,454,748, Cl. 73-19.000.
Imazu, Katsuhiro; and Watanabe, Toshiaki, to Toyo Seikan Kaisha, Ltd. Draw-ironed can formed of surface-treated steel plate and process for preparation thereof. 4,454,960, Cl. 220-456.000.
Imec Corporation: *See*—
Fulton, Donald E.; Curtiss, William P.; and Fejes, William T., Jr., 4,455,513, Cl. 318-138.000.
Imose, Masayuki; Seno, Takao; and Sakaguchi, Yoshihito, to Chugai Ro Co., Ltd. Floating equipment and floating-type heat treating furnace for striplike works. 4,455,136, Cl. 432-59.000.
Imperial Chemical Industries Limited: *See*—
Pinto, Alwyn, 4,455,394, Cl. 518-704.000.
Imperial Chemical Industries PLC: *See*—
Higgins, Irving J., 4,455,373, Cl. 435-132.000.
Thompson, David J., 4,455,253, Cl. 252-299.100.
Imperial Clevite Inc.: *See*—
Masters, David A., 4,455,682, Cl. 455-300.000.
Inaba, Shosei, to Victor Company of Japan, Ltd. Case for accommodating a rotary recording medium. 4,455,642, Cl. 369-291.000.
Inai, Yuichi: *See*—
Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Suzuki, Takeshi; Kinoshita, Kensaku; Mishima, Mannen; Katoh, Yoshinori; Kobayashi, Seiichi; Murakami, Manabu; and Yamada, Kouzi, 4,455,316, Cl. 424-274.000.
Inamura, Kiyonari; Ueda, Yasuo; Furushima, Nobumasa; and Shigaki, Keisuke, to Nippon Electric Co., Ltd. Apparatus for realtime fast reconstruction and display of dose distribution. 4,455,609, Cl. 364-414.000.
Inbar, Dan, to Elscint, Ltd. Fast gamma camera. 4,455,616, Cl. 364-527.000.
Inco Limited: *See*—
Dymock, Kenneth R.; and Bell, Malcolm C., 4,455,218, Cl. 208-50.000.
Industrial Parts Depot: *See*—
Rasmussen, Robert, 4,455,053, Cl. 305-53.000.
Ingersoll-Rand Company: *See*—
Goehler, Robert F.; Addleman, Jeffrey L.; and Rotz, Dana R., 4,454,780, Cl. 74-87.000.
Innovation Technique: *See*—
Grandclement, Gerard, 4,455,482, Cl. 219-551.000.
Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,455,469, Cl. 219-69.00M.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Method and apparatus for EDM with laterally vibrated tool electrode. 4,455,469, Cl. 219-69.00M.
Inoue MTP Kabushiki Kaisha: *See*—
Okina, Toyohiko, 4,455,340, Cl. 428-215.000.
Inoue, Tomohiro; and Tanimoto, Akira, to Sharp Kabushiki Kaisha. Programmable musical instrument. 4,454,796, Cl. 84-1.030.
Inoue, Yoshikazu: *See*—
Satake, Takeo; Ishigami, Masahisa; Arimoto, Kunio; Matsuba, Yorishige; Inoue, Yoshikazu; Tanaka, Yusuke; and Kanda, Kohei, 4,455,149, Cl. 44-51.000.
Inouye, Shigeharu: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,455,163, Cl. 71-86.000.
Institut Francais du Petrole: *See*—
Bergault, Anne-Marie; Bonavent, Gerard, deceased; Jarrin, Jacques; and Mollard, Marc, 4,455,406, Cl. 525-194.000.
Integral Data Systems, Inc.: *See*—
Rosenberg, Neil A., 4,454,975, Cl. 226-74.000.
International Business Machines Corporation: *See*—
Cormier, Roger L.; Dugan, Robert J.; Guyette, Richard R.; Wanish, Paul J.; and Zeitler, Carl, Jr., 4,455,605, Cl. 364-200.000.
Demke, Kent R., 4,455,554, Cl. 340-731.000.
Denis, Bernard A.; and Eardley, David B., 4,455,625, Cl. 365-154.000.
Esteban, Daniel J.; Jones, Gardner D., Jr.; and Rogers, Lee S., 4,455,649, Cl. 370-80.000.
Griscom, Robert E.; and Stranko, Thomas A., 4,455,601, Cl. 364-200.000.
Joy, Richard C.; Kemlage, Bernard M.; and Mauer, John L., IV, 4,454,646, Cl. 29-576.00W.
Joy, Richard C.; Kemlage, Bernard M.; and Mauer, John L., IV, 4,454,647, Cl. 29-576.00W.
International Harvester Co.: *See*—
Akins, Herbert G., 4,454,926, Cl. 180-68.100.
International Institute of Cellular and Molecular Pathology: *See*—
Magnusson, Carl-Gustaf M.; Collet-Cassart, Daniel; and Masson, Pierre L., 4,455,381, Cl. 436-543.000.
International Shoe Machine Corporation: *See*—
Bennett, George, 4,454,830, Cl. 112-239.000.
International Standard Electric Corporation: *See*—
Lamb, John G.; and Mackay, Malcolm D., 4,455,159, Cl. 65-3.110.
International Telecommunications Satellite Organization (INTELSAT): *See*—
Stegens, Ronald E., 4,455,536, Cl. 330-286.000.
International Telephone and Telegraph Corporation: *See*—
Cochran, William T., 4,455,456, Cl. 179-18.0FA.
Interpatent B.V.: *See*—
Fischer, Gerhard; and Berger, Harald, 4,455,013, Cl. 254-267.000.
Intertractor Viehmann GmbH & Co., Firma: *See*—
Brunn, Hansjoachim, 4,455,054, Cl. 305-58.00R.
Intevep: *See*—
Calderon, Jose L.; and Layrisse, Ignacio, 4,455,221, Cl. 208-347.000.
Inui, Tsuneo; Kuroda, Hitoshi; Hizuka, Kenji; Kunishige, Fumio; and Kondo, Yoshikazu, to Toyo Kohan Co., Ltd. Tin-free steel can body. 4,455,355, Cl. 428-595.000.
Inumaru, Susumu: *See*—
Terai, Shiro; Sato, Shiro; Kato, Sakae; Imai, Masaya; Inumaru, Susumu; and Yoshida, Masahiro, 4,454,748, Cl. 73-19.000.
Iowa State University Research Foundation, Inc.: *See*—
Girgis, Adly A.; and Brown, Robert G., 4,455,612, Cl. 364-483.000.
Yeung, Edward S.; and Woodruff, Steven D., 4,455,089, Cl. 356-352.000.
Irgang, Matthias: *See*—
Horner, Michael; Irgang, Matthias; and Nissen, Axel, 4,455,442, Cl. 568-875.000.
Irvine, Robert, to Pitney Bowes Inc. Perforation burst cone device. 4,454,973, Cl. 225-100.000.
Irwin, Everett F. Rotating cylinder external combustion engine. 4,454,712, Cl. 60-39.630.
Irwin, Everett F. Rotating cylinder fluid pressure device. 4,455,125, Cl. 417-244.000.
Isakov, Evgeny A.: *See*—
Sizyakov, Viktor M.; Kaluzhsky, Nikolai A.; Badaiants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Isakov, Evgeny A.; Alexandrova, Zarya N.; Afanasiev, Valentin N.; Chernov, Vinetsy I.; Zhukov, Alexandr G.; Kutsenko, Viktor S.; Vysotskaya, Galina M.; Ostrovlyanchik, Evgenia S.; Mironov, Evgeny I.; Vladimirov, Pavel S.; Alexeev, Alexei I.; Finkelshtein, Leonid I., deceased; Finkelshtein, Nina J., administrator; and Finkelshtein, Julia L., administrator, 4,455,284, Cl. 423-119.000.
Isenberg, Arnold O., to Westinghouse Electric Corp. Thin-film sensor apparatus. 4,455,214, Cl. 204-428.000.
Ishida, Nobuyoshi; Kondo, Yoshihide; Konishi, Kunihiko; and Kamio, Hiroyuki, to Babcock-Hitachi Kabushiki Kaisha. Plate-shaped catalyst unit for NOx reduction of exhaust gas. 4,455,281, Cl. 422-171.000.
Ishido, Yoshiharu: *See*—
Umezawa, Hamao; Umezawa, Sumio; Ishido, Yoshiharu; and Fukatsu, Shunzo, 4,455,419, Cl. 536-13.800.
Ishigami, Masahisa: *See*—
Satake, Takeo; Ishigami, Masahisa; Arimoto, Kunio; Matsuba, Yorishige; Inoue, Yoshikazu; Tanaka, Yusuke; and Kanda, Kohei, 4,455,149, Cl. 44-51.000.
Ishii, Takeshi: *See*—
Mizuno, Junzi; Fukami, Akira; Okamoto, Kunio; and Ishii, Takeshi, 4,454,849, Cl. 123-519.000.
Ishikawa, Koji; Ozawa, Hiroshi; Kobayashi, Nobuki; Kikuta, Yoshio; and Nakane, Kenichi, to Mitsui Toatsu Chemicals, Incorporated. Electrophotographic toner comprising cinnamic acid. 4,455,360, Cl. 430-109.000.
Ishimaru, Shingo: *See*—
Kojima, Tetsuro; Ishimaru, Shingo; Sugimoto, Naohiko; and Ikeda, Tadashi, 4,455,368, Cl. 430-507.000.

Ishizuka, Akio; and Kitada, Akira, to Fuji Photo Film Co., Ltd. Process for the preparation of radiographic intensifying screen. 4,455,323, Cl. 427-65.000.

Isomura, Shigenori; Kondo, Toshio; Kodama, Katsuhiko; Kobayashi, Akio; and Sakakibara, Shuji, to Nippondenso Co., Ltd. Method for controlling the air-fuel ratio in an internal combustion engine. 4,454,847, Cl. 123-492.000.

Itkis, Yuri. Electronic card and board game. 4,455,025, Cl. 273-237.000.

ITM International Tool Machines, Inc.: *See*—
Giebmanns, Karl-Heinz, 4,454,689, Cl. 51-217.00R.

Ito, Haruaki: *See*—
Kojima, Kazuhiro; Ito, Haruaki; and Kubo, Hiroshi, 4,455,315, Cl. 424-274.000.

Ito, Kenichi: *See*—
Kato, Kiichi; Ito, Kenichi; and Musha, Tohru, 4,455,085, Cl. 356-122.000.

Itoh, Takehiko; and Sakamoto, Moriyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Electric oven toaster. 4,455,479, Cl. 219-405.000.

ITT Industries, Inc.: *See*—
Alexander, John H., 4,455,590, Cl. 361-306.000.

ITW Fastex Italia S.p.A: *See*—
Bassi, Alberto, 4,455,048, Cl. 297-367.000.

Iversen, Arthur H. Liquid cooled anode x-ray tubes. 4,455,504, Cl. 313-30.000.

Ives, Robert K., to Michaels of Oregon Co. Locking quick-detachable sling swivel. 4,454,675, Cl. 42-85.000.

Ivony, Jozsef; Ratsko, Istvan; Karaszy, Gyorgy; and Madi, Jeno. Anti-jackknifing device with friction brake for articulated motor vehicle. 4,455,035, Cl. 280-432.000.

Iwashita, Tomonori; Watanabe, Yoshitaka; and Fukahori, Hidehiko, to Canon Kabushiki Kaisha. Electric motor drive device camera. 4,455,075, Cl. 354-173.100.

Izuhara, Koichi, to Minolta Camera Kabushiki Kaisha. Camera capable of programmed exposure control. 4,455,068, Cl. 354-412.000.

Izumita, Morishi: *See*—
Takahashi, Kenji; Nagahara, Shusaku; Izumita, Morishi; Sato, Kazuhiro; Akiyama, Toshiyuki; and Ozawa, Naoki, 4,455,569, Cl. 358-51.000.

J. I. Case Company: *See*—
Baker, Joe L., 4,454,687, Cl. 49-419.000.

J V Kunststoffwerk GmbH: *See*—
Hermann, Manfred P., 4,455,209, Cl. 204-279.000.

Jabarin, Saleh A.; and Kollen, Wendell J., to Owens-Illinois Inc. Multi-wall container. 4,454,945, Cl. 206-524.300.

Jackson, Carroll V.; and Avery, Hazelton H., to United Conveyor Corporation. Pressure conveyor for feeding pulverulent material into a pressurized air conveyor pipeline. 4,455,111, Cl. 406-56.000.

Jacobsen, Gunter: *See*—
Arnold, Dieter; Bartels, Jorg; Lenzmann, Heinrich; Jacobsen, Gunter; Wendt, Heinz; and Stoltenberg, Manfred, 4,455,439, Cl. 568-302.000.

Jacobsmeyer, Bernard J.; and Reding, Gary D., to Olin Corporation. Product inspection and ejection system. 4,454,947, Cl. 209-548.000.

Jaffe, Edward E., to Du Pont de Nemours, E. I., and Company. Preparation of pigmentary form of quinacridone pigments. 4,455,173, Cl. 106-288.00Q.

Jager, Werner: *See*—
Sartor, Bruno; Jager, Werner; Ebinger, Horst; Luthardt, Gunther; and Bergmann, Walter, 4,455,207, Cl. 204-192.00E.

Jaggard, James F. R.; Schweier, Guenther; and Klaerner, Peter, to BASF Aktiengesellschaft. Preparation of propylene/ethylene block copolymers. 4,455,405, Cl. 525-53.000.

Jakahi, Douglas Y. Apparatus for storing solar energy in synthetic fuels. 4,455,153, Cl. 48-62.00R.

Jakob, Willi; and Hornivius, Lothar, to Kuster + Co. GmbH. Extruder coating die. 4,455,133, Cl. 425-113.000.

Jalan, Vinod; Reid, Margaret A.; and Charleston, Jo Ann, to United States of America, National Aeronautics and Space Administration. Chromium electrodes for REDOX cells. 4,454,649, Cl. 29-623.500.

Jalan, Vinod M.: *See*—
Young, John E.; and Jalan, Vinod M., 4,455,286, Cl. 423-230.000.

James, John E.: *See*—
Rorer, David L.; and James, John E., 4,455,357, Cl. 429-179.000.

James, Kenneth A.: *See*—
Strahan, Virgil H.; James, Kenneth A.; and Quick, William H., 4,455,267, Cl. 264-1.300.

James River Corporation: *See*—
Kinsley, Homan B., 4,455,195, Cl. 162-13.000.
Kinsley, Homan B., 4,455,237, Cl. 210-767.000.

Jameson, Calvin R.; and Baker, Robert G., to Nordson Corporation. Thermally insulated electrically heated hose for transmitting hot liquids. 4,455,474, Cl. 219-301.000.

Jamison, Will B.; and Pyles, Harley G., to Consolidation Coal Company. Drill rod and drilling apparatus. 4,454,922, Cl. 175-323.000.

Janer, Patrick: *See*—
Henriot, Marie C.; and Janer, Patrick, 4,455,540, Cl. 333-202.000.

Janssen, Donovan M.: *See*—
Colglazier, Donald F.; Janssen, Donovan M.; Mantey, John P.; and Valent, James A., 4,455,018, Cl. 271-227.000.

Janssen, Harry R.; and Poffenbarger, Gary L., to Conoco Inc. Method of reducing coke yield. 4,455,219, Cl. 208-131.000.

Japan Aviation Electronics Industry Limited: *See*—
Yasumi, Masaoki, 4,454,657, Cl. 33-180.00R.

Jarrin, Jacques: *See*—
Bergault, Anne-Marie; Bonavent, Gerard, deceased; Jarrin, Jacques; and Mollard, Marc, 4,455,406, Cl. 525-194.000.

Jarrott, David M.; and Jarrott, Frank E. Process for the geoconversion of coal into oil. 4,455,215, Cl. 208-8.0LE.

Jarrott, Frank E.: *See*—
Jarrott, David M.; and Jarrott, Frank E., 4,455,215, Cl. 208-8.0LE.

Jen, Hsianmin F., to Avco Corporation. Rotating turbine stator. 4,455,121, Cl. 415-143.000.

Jenkins, Leonard A., to Metal Box Limited. Coating of articles. 4,455,328, Cl. 427-224.000.

Jentzsch, Arndt: *See*—
Johne, Hans; Schmidt, Lothar; and Jentzsch, Arndt, 4,454,812, Cl. 101-212.000.

Jernigan, Kerry D.: *See*—
Guidry, Shelby L.; and Jernigan, Kerry D., 4,454,913, Cl. 166-117.500.

Jeuch, Pierre; and Parrens, Pierre, to Commissariat a l'Energie Atomique. Process for producing the field oxide of an integrated circuit. 4,455,193, Cl. 156-643.000.

Jewett, Robert A.: *See*—
Walden, Jack M.; Eads, William D.; Cozzens, Ray J.; Bidwell, John L.; Jewett, Robert A.; Wilson, Martin S.; Griffin, Daniel J.; Kuseski, Robert E.; and Schulte, Louis T., 4,455,618, Cl. 364-900.000.

Johansson, Borje: *See*—
Santen, Sven; and Johansson, Borje, 4,455,165, Cl. 75-10.00R.

Johansson, Ingvar, to Volvo Flygmotor AB. Sealing device with radially slitted metal washers for hydraulic piston mechanisms. 4,455,028, Cl. 277-53.000.

Johansson, Sigvard: *See*—
Haglund, Lennart; and Johansson, Sigvard, 4,454,634, Cl. 24-636.000.

John Fluke Mfg. Co., Inc.: *See*—
Bhaskar, Kasi S.; Carlson, Alden J.; Couper, Alastair N.; Lambert, Dennis L.; and Scott, Marshall H., 4,455,654, Cl. 371-20.000.

Johne, Hans; Schmidt, Lothar; and Jentzsch, Arndt, to Veb Kombinat Polygraph "Werner Lamberz" Leipzig. Safety device for counter rollers in a printing machine. 4,454,812, Cl. 101-212.000.

Johnson, Bruce G.: *See*—
Johnson, Louis W.; and Johnson, Bruce G., 4,454,994, Cl. 241-215.000.

Johnson, Carl A., to Owens-Corning Fiberglas Corporation. Migratin-free size for glass fibers. 4,455,400, Cl. 523-454.000.

Johnson, Edward L.: *See*—
Pohl, Christopher A.; Slingsby, Rosanne W.; Johnson, Edward L.; and Angers, Leilani, 4,455,233, Cl. 210-635.000.

Johnson & Johnson Dental Products Company: *See*—
Panzera, Carlino, 4,455,383, Cl. 501-6.000.

Johnson, Louis W.; and Johnson, Bruce G. Load bearing surface. 4,454,994, Cl. 241-215.000.

Johnson, Michael R.: *See*—
Bindra, Jasjit S.; Eggler, James F.; Johnson, Michael R.; and Schaaf, Thomas K., 4,455,421, Cl. 548-252.000.

Johnson, Robert E., to Pyrotector, Inc. Smoke detector of the ionization type. 4,455,553, Cl. 340-629.000.

Johnson, Robert M., to National Gypsum Company. Foamed gypsum wallboard. 4,455,271, Cl. 264-42.000.

Johnson, Roy A., to Upjohn Company, The. Pyridyl-substituted-benzofurans. 4,455,427, Cl. 546-269.000.

Johnson, Vendell J. Snow removal and compaction device. 4,454,667, Cl. 37-225.000.

Johnson, William M. Flash gate board. 4,455,106, Cl. 405-94.000.

Johnston Environmental Corporation: *See*—
Oxman, Jack, 4,454,904, Cl. 160-332.000.

Jones, Gardner D., Jr.: *See*—
Esteban, Daniel J.; Jones, Gardner D., Jr.; and Rogers, Lee S., 4,455,649, Cl. 370-80.000.

Jones, George H. Rotary magnetic separators. 4,455,228, Cl. 210-222.000.

Jones, Harold A.; Teixeira, Manuel G.; and Verrier, Arthur N., to Leesona Corporation. Inlet guide means for strand user devices. 4,454,997, Cl. 242-47.010.

Jones, Ian R.: *See*—
Brown, Donald P.; Jones, Ian R.; and Vurpillat, Victor V., 4,454,863, Cl. 126-432.000.

Jones, Thomas M.: *See*—
Ahlstrom, John K.; Bachman, Brett; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr; and Well, Douglas M., 4,455,604, Cl. 364-200.000.

Jordan, Howard E.: *See*—
Day, Alvin L.; and Jordan, Howard E., 4,455,521, Cl. 318-798.000.

Joslin, Joel A., to Sherwood Medical Company. Body fluid collection device. 4,455,140, Cl. 604-317.000.

Joy, Richard C.; Kemlage, Bernard M.; and Mauer, John L., IV, to International Business Machines Corporation. Isolation for high density integrated circuits. 4,454,646, Cl. 29-576.00W.

Joy, Richard C.; Kemlage, Bernard M.; and Mauer, John L., IV, to International Business Machines Corporation. Isolation for high density integrated circuits. 4,454,647, Cl. 29-576.00W.

Juhola, Mauno O. Procedure and means for creating a vertical drain. 4,455,105, Cl. 405-50.000.

Juillet, Jacques; Olmi, Eugenio; and Stephan, Michel, to Le Moulage Automatique. Inviolable cover for a vessel aperture. 4,454,958, Cl. 220-339.000.

Kabushiki Kaisha Ishida Koki Seisakusho: *See*—
Minamida, Kazukiyo, 4,454,924, Cl. 177-25.000.

Kabushiki Kaisha Orii Jidoki Seisakusho: *See*—
Orii, Masaru, 4,454,781, Cl. 74-99.00R.
Kaiser, Robert G., to Clark & Vicario Corporation. Apparatus for treating a papermaking suspension. 4,455,224, Cl. 209-211.000.
Kajikawa, Tsuneo, to Honda Giken Kogyo Kabushiki Kaisha. Front wheel suspension for a motor tricycle and associated method. 4,455,032, Cl. 280-276.000.
Kajiyama, Shigeo: *See*—
Suzuki, Yoshitsugu; Iizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, 4,454,652, Cl. 29-863.000.
Kakimi, Fujio: *See*—
Naoi, Takashi; and Kakimi, Fujio, 4,455,362, Cl. 430-137.000.
Kaley, Robert C.: *See*—
Harner, Donald R.; Kaley, Robert C.; and Crawford, Christopher L., 4,455,058, Cl. 339-99.00R.
Kaluzhsky, Nikolai A.: *See*—
Sizyakov, Viktor M.; Kaluzhsky, Nikolai A.; Badaiants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Isakov, Evgeny A.; Alexandrova, Zarya N.; Afanasiev, Valentin N.; Chernov, Vinetsy I.; Zhukov, Alexandr G.; Kutsenko, Viktor S.; Vysotskaya, Galina M.; Ostrovlyanchik, Evgenia S.; Mironov, Evgeny I.; Vladimirov, Pavel S.; Alexeev, Alexei I.; Finkelshtein, Leonid I., deceased; Finkelshtein, Nina J., administrator; and Finkelshtein, Julia L., administrator, 4,455,284, Cl. 423-119.000.
Kamanaka, Ryusuke. Warmer apparatus for horticulture facilities utilizing solar heat. 4,454,862, Cl. 126-421.000.
Kamejima, Kohji: *See*—
Hibino, Yozo; Kamejima, Kohji; and Nara, Yasuaki, 4,454,726, Cl. 62-148.000.
Kamigaki, Yoshiaki: *See*—
Masuhara, Toshiaki; Minato, Osamu; Shimohigashi, Katsuhiro; Masuda, Hiroo; Sunami, Hideo; Sakai, Yoshio; Kamigaki, Yoshiaki; Takeda, Eiji; and Hagiwara, Yoshimune, 4,455,495, Cl. 307-44.000.
Kamijo, Yoshimi; and Kawachi, Kazuhiko, to Alps Electric Co., Ltd. Method of producing electroluminescent cell. 4,455,324, Cl. 427-66.000.
Kamio, Hiroyuki: *See*—
Ishida, Nobuyoshi; Kondo, Yoshihide; Konishi, Kunihiko; and Kamio, Hiroyuki, 4,455,281, Cl. 422-171.000.
Kampf, Richard S.; Sohn, Chul H.; and Khan, Aurangzeb K., to Beckman Instruments, Inc. Apparatus for transporting sample holders. 4,454,939, Cl. 198-341.000.
Kanai, Takeshi: *See*—
Nakayama, Toshio; and Kanai, Takeshi, 4,455,247, Cl. 252-67.000.
Kanazawa, Masao: *See*—
Yabu, Takashi; and Kanezawa, Masao, 4,455,194, Cl. 156-653.000.
Kanda, Kohei: *See*—
Satake, Takeo; Ishigami, Masahisa; Arimoto, Kunio; Matsuba, Yorishige; Inoue, Yoshikazu; Tanaka, Yusuke; and Kanda, Kohei, 4,455,149, Cl. 44-51.000.
Kanebo Ltd.: *See*—
Sakamoto, Fumio; Ikeda, Shoji; and Tsukamoto, Goro, 4,455,310, Cl. 424-250.000.
Kaneda, Hiroyuki, to Nippon Electric Co., Ltd. Speech processing system including an amplitude level control circuit for digital processing. 4,455,676, Cl. 381-106.000.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Tomishima, Yoshio; Kobayashi, Teiji; Shibahara, Hiroshi; and Nojima, Yasuhiro, 4,455,413, Cl. 526-344.200.
Yamane, Kazumasa; Kobayashi, Masahiro; and Takada, Masahiko, 4,455,407, Cl. 525-208.000.
Kansas Jack, Inc.: *See*—
Eck, Leonard F., 4,454,659, Cl. 33-288.000.
Karaszy, Gyorgy: *See*—
Ivony, Jozsef; Ratsko, Istvan; Karaszy, Gyorgy; and Madi, Jeno, 4,455,035, Cl. 280-432.000.
Karp, Valentina K.: *See*—
Portnyagina, Vera A.; Karp, Valentina K.; Barkova, Irina S.; Trinus, Fedor P.; Mokhort, Nikolai A.; Fadeicheva, Alexandra G.; Kozhushko, Galina I.; Ryabukha, Tatyana K.; Panteleimonov, Alexandr G.; Kljushin, Viktor V.; Dobrovolsky, Jury N.; Kirichek, Larisa M.; Medvedovsky, Adolf A.; Getman, Galina A.; Usenko, Jury D.; Sidelnikov, Viktor M.; Danilevsky, Nikolai F.; and Solsky, Yakov P., 4,455,312, Cl. 424-251.000.
Kasama, Yasuo: *See*—
Urata, Yukihide; Kasama, Yasuo; Moriuchi, Shigenori; and Okutsu, Eiichi, 4,455,365, Cl. 430-309.000.
Kaspar, Lothar; and Seiffert, Ulrich, to Volkswagenwerk Aktiengesellschaft. Drive train for a vehicle. 4,454,789, Cl. 74-850.000.
Kasper, James J.; Bosch, George E.; and Smith, Craig A., to Watteredge-Uniflex, Inc. Coaxial bus and bus system. 4,455,659, Cl. 373-39.000.
Kasuga, Akira: *See*—
Miyatuka, Hajime; and Kasuga, Akira, 4,455,345, Cl. 428-332.000.
Katamoto, Kazuyoshi: *See*—
Nara, Kiyoshi; Katamoto, Kazuyoshi; Ohkido, Sadao; Yamamoto, Isao; and Yanome, Hiroshi, 4,455,306, Cl. 424-246.000.
Kato, Kiichi; Ito, Kenichi; and Musha, Tohru, to Olympus Optical Co. Ltd. Method and apparatus for detecting a focussing condition of an objective lens. 4,455,085, Cl. 356-122.000.
Kato, Masatake; and Tsunekawa, Tokuichi, to Canon Kabushiki Kaisha. Light measuring instrument for a single lens reflex camera. 4,455,071, Cl. 354-431.000.
Kato, Sakae: *See*—
Terai, Shiro; Sato, Shiro; Kato, Sakae; Imai, Masaya; Inumaru, Susumu; and Yoshida, Masahiro, 4,454,748, Cl. 73-19.000.
Katoh Electrical Machinery Co., Ltd.: *See*—
Koyahata, Hiroshi, 4,455,640, Cl. 369-216.000.
Katoh, Yoshinori: *See*—
Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Suzuki, Takeshi; Kinoshita, Kensaku; Mishima, Mannen; Katoh, Yoshinori; Kobayashi, Seiichi; Murakami, Manabu; and Yamada, Kouzi, 4,455,316, Cl. 424-274.000.
Katoh, Yuuichi: *See*—
Nagata, Kenichi; Nagamori, Shigeru; Katoh, Yuuichi; Satoh, Katsumi; and Yano, Takashi, 4,455,148, Cl. 44-1.0SR.
Katz, Lawrence H.: *See*—
Ahlstrom, John K.; Bachman, Brett; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr; and Well, Douglas M., 4,455,604, Cl. 364-200.000.
Bratt, Richard G.; Katz, Lawrence H.; and Wells, Douglas M., 4,455,603, Cl. 364-200.000.
Kaucic, Robert A.: *See*—
Schneider, Joseph J.; and Kaucic, Robert A., 4,454,978, Cl. 228-151.000.
Kaul, Bansi L., to Sandoz Ltd. Triazinyl compounds as intermediates for producing naphthoquinone derivatives. 4,455,424, Cl. 544-218.000.
Kavesh, Sheldon: *See*—
Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., 4,455,273, Cl. 264-184.000.
Kawachi, Kazuhiko: *See*—
Kamijo, Yoshimi; and Kawachi, Kazuhiko, 4,455,324, Cl. 427-66.000.
Kawakami, Hiromi: *See*—
Yamamoto, Yoshihiro; and Kawakami, Hiromi, 4,455,573, Cl. 358-198.000.
Kawamura, Masaharu, to Canon Kabushiki Kaisha. Camera with EE lock. 4,455,069, Cl. 354-434.000.
Kawamura, Takahide: *See*—
Uchida, Shigekatsu; Akatsuka, Takao; and Kawamura, Takahide, 4,454,843, Cl. 123-179.00B.
Kaye, William G.: *See*—
Watkins, David W.; Wheatley, Peter C.; and Kaye, William G., 4,455,285, Cl. 423-171.000.
Kazama, Ken; Muramoto, Ikuo; Kusunoki, Yoshinobu; Ozaki, Kenji; and Fujii, Hideyuki, to Asahi Kasei Kogyo Kabushiki Kaisha; and Tos Wool Spinning & Weaving Co., Ltd. Process for recovering animal hair grease. 4,455,259, Cl. 260-397.250.
Kazlauskas, Rymantas, to Hoffmann-La Roche Inc. 4-Amino-7-(5-deoxy-beta-D-ribofuranosyl)-5-iodo-7H-pyrrolo[2,3-d] pyrimidine. 4,455,420, Cl. 536-24.000.
Kazmaier, Gunther: *See*—
Goller, Ernst; Kazmaier, Gunther; and Schmodde, Hermann, 4,454,731, Cl. 66-149.00R.
Keister, Lyle T.: *See*—
Crum, Stephen T.; and Keister, Lyle T., 4,455,509, Cl. 315-119.000.
Kelly, Robert C.; and Wierenga, Wendell, to Upjohn Company, The. Process for preparing tricholomic acid and derivatives thereof. 4,455,430, Cl. 548-243.000.
Kelsey Hayes Company: *See*—
Hunnicutt, Harry A.; and Buckley, James A., 4,454,933, Cl. 188-71.900.
Kemlage, Bernard M.: *See*—
Joy, Richard C.; Kemlage, Bernard M.; and Mauer, John L., IV, 4,454,646, Cl. 29-576.00W.
Joy, Richard C.; Kemlage, Bernard M.; and Mauer, John L., IV, 4,454,647, Cl. 29-576.00W.
Kemper, Yves J., to Vadetec Corporation. Torque transmitting body for traction drive transmissions and normal friction force developing method. 4,454,782, Cl. 74-191.000.
Kemtune, Inc.: *See*—
Sanderson, Scott A.; and Bruot, Eric F., 4,455,229, Cl. 210-222.000.
Kenan, Richard P., to Canon Kabushiki Kaisha. Surface acoustic wave transducer array for a guided-wave acoustooptic device. 4,455,064, Cl. 350-96.130.
Kenan, Richard P.: *See*—
Wood, Van E.; and Kenan, Richard P., 4,455,063, Cl. 350-96.120.
Kendall, Paul A., to Kendall, Paul A. Battery condition indicator. 4,455,524, Cl. 320-48.000.
Kern, Ernest J. Chimney cleaning apparatus. 4,454,625, Cl. 15-249.000.
Kern, Gilbert G. Suspended woodbeam ceiling. 4,454,700, Cl. 52-665.000.
Kerserho, Francois M., to Societe pour le Developpement de la Recherche Industrielle "SODRI". Waterproofing composition for the bulk treatment of plaster or a plaster-based product and corresponding method. 4,455,172, Cl. 106-109.000.
Kettman, John R.: *See*—
Hansen, Eric J.; Kettman, John R.; and Robertson, Stella M., 4,455,296, Cl. 424-87.000.
Khan, Aurangzeb K.: *See*—
Kampf, Richard S.; Sohn, Chul H.; and Khan, Aurangzeb K., 4,454,939, Cl. 198-341.000.
Kidde, Inc.: *See*—
Riordan, William J.; and Collins, Charles, 4,455,589, Cl. 361-190.000.

Kienzle, Frank, to Hoffmann-La Roche Inc. Imidazoquinazoline derivatives which inhibit the aggregation of blood platelets, inhibit gastric secretion or have activity on the circulatory system. 4,455,311, Cl. 424-251.000.

Kikkawa, Nobuyuki: *See*—
Takematsu, Tetsuo; Kikkawa, Nobuyuki; and Ogawa, Hideaki, 4,455,164, Cl. 71-118.000.

Kikuta, Yoshio: *See*—
Ishikawa, Koji; Ozawa, Hiroshi; Kobayashi, Nobuki; Kikuta, Yoshio; and Nakane, Kenichi, 4,455,360, Cl. 430-109.000.

Kim, Bang M., to General Electric Company. Method for removing hydrogen sulfide from aqueous streams. 4,455,236, Cl. 210-721.000.

Kim, Young B.: *See*—
Efron, Edward; McPherson, James O.; and Kim, Young B., 4,455,634, Cl. 369-58.000.

Kimura, Kiyoshi: *See*—
Miwa, Tadashi; Kimura, Kiyoshi; Komiya, Yukiharu; and Tarumi, Noriyoshi, 4,455,079, Cl. 355-3.0TR.

Kimura, Tomoaki: *See*—
Kodama, Hideyo; Niyama, Eisuke; Endo, Munehiro; and Kimura, Tomoaki, 4,454,908, Cl. 164-454.000.

Kin, Frederick R.: *See*—
Primack, Harold S.; Reedy, Dom E.; and Kin, Frederick R., 4,455,287, Cl. 423-573.00R.

Kinde, Ronald A., Sr.: *See*—
Reinhard, George G.; Osgood, Gordon L., Sr.; and Kinde, Ronald A., Sr., 4,454,841, Cl. 123-3.000.

King Engineering Corporation: *See*—
Carlisle, George W., 4,454,760, Cl. 73-302.000.

King Instrument Corporation: *See*—
Sarser, David, 4,454,998, Cl. 242-68.100.

Kinoshita, Kensaku: *See*—
Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Suzuki, Takeshi; Kinoshita, Kensaku; Mishima, Mannen; Katoh, Yoshinori; Kobayashi, Seiichi; Murakami, Manabu; and Yamada, Kouzi, 4,455,316, Cl. 424-274.000.

Kinsey, Lewis R. Four cycle rotary engine employing eccentrical mounted rotor. 4,454,844, Cl. 123-236.000.

Kinsley, Homan B., to James River Corporation. Fibrous filter media and process for producing same. 4,455,195, Cl. 162-13.000.

Kinsley, Homan B., to James River Corporation. High bulk pulp, filter media utilizing such pulp, related processes. 4,455,237, Cl. 210-767.000.

Kinzler, Hans, to Siemens Aktiengesellschaft. Subassembly, in particular a choke and a filter for radio interference control. 4,455,538, Cl. 333-167.000.

Kirichek, Larisa M.: *See*—
Portnyagina, Vera A.; Karp, Valentina K.; Barkova, Irina S.; Trinus, Fedor P.; Mokhort, Nikolai A.; Fadeicheva, Alexandra G.; Kozhushko, Galina I.; Ryabukha, Tatyana K.; Panteleimonov, Alexandr G.; Kljushin, Viktor V.; Dobrovolsky, Jury N.; Kirichek, Larisa M.; Medvedovsky, Adolf A.; Getman, Galina A.; Usenko, Jury D.; Sidelnikov, Viktor M.; Danilevsky, Nikolai F.; and Solsky, Yakov P., 4,455,312, Cl. 424-251.000.

Kirk, Donald C., Jr., to Ethyl Products Company. Child-resistant trigger pump dispenser. 4,454,965, Cl. 222-153.000.

Kiscaden, Roy W.: *See*—
Martz, Lyle F.; Kiscaden, Roy W.; and Uram, Robert, 4,455,614, Cl. 364-494.000.

Kishi, Noriyuki: *See*—
Otobe, Yutaka; and Kishi, Noriyuki, 4,454,855, Cl. 123-571.000.

Kistler-Morse Corporation: *See*—
Kistler, Walter P., 4,454,770, Cl. 73-862.650.

Kistler, Walter P., to Kistler-Morse Corporation. Torque-insensitive load cell. 4,454,770, Cl. 73-862.650.

Kisumi, Masahiko: *See*—
Chibata, Ichiro; Kisumi, Masahiko; Sugiura, Masaki; and Takagi, Tsutomu, 4,455,372, Cl. 435-107.000.

Kitada, Akira: *See*—
Ishizuka, Akio; and Kitada, Akira, 4,455,323, Cl. 427-65.000.

Kitagawa, Tsuneo: *See*—
Sugiura, Masamichi; Kitagawa, Tsuneo; and Yoshida, Keiji, 4,455,080, Cl. 355-14.0SH.

Kitchener, Ivor J., to British Gas Corporation. Passivated CRG catalysts. 4,455,391, Cl. 502-315.000.

Klaerner, Peter: *See*—
Jaggard, James F. R.; Schweier, Guenther; and Klaerner, Peter, 4,455,405, Cl. 525-53.000.

Klein, Heinrich; Pieper, Rudolf; and Weber, Eduard, to Kraftwerk Union Aktiengesellschaft. Tornado flow separator for the thermal treatment of fine-grain or granular material. 4,454,661, Cl. 34-57.00E.

Klein, John F.; Bhansali, Chandra K.; Fox, Thomas J.; Smyth, Richard T.; and Zatorski, Raymond A., to Perkin-Elmer Corporation, The. Plasma spray gun nozzle and coolant deionizer. 4,455,470, Cl. 219-121.0PP.

Klein, Pearl M. Flocculating reagent. 4,455,245, Cl. 252-60.000.

Kleinschmit, Peter: *See*—
Panster, Peter; Kleinschmit, Peter; and Buder, Wolfgang, 4,455,415, Cl. 528-39.000.
Schmidt, Sabine; Kleinschmit, Peter; Schwarz, Rudolf; and Domesle, Rainer, 4,455,246, Cl. 252-62.000.

Klingsberg, Erwin: *See*—
Dundon, John P.; and Klingsberg, Erwin, 4,455,435, Cl. 549-309.000.

Kljushin, Viktor V.: *See*—
Portnyagina, Vera A.; Karp, Valentina K.; Barkova, Irina S.; Trinus, Fedor P.; Mokhort, Nikolai A.; Fadeicheva, Alexandra G.; Kozhushko, Galina I.; Ryabukha, Tatyana K.; Panteleimonov, Alexandr G.; Kljushin, Viktor V.; Dobrovolsky, Jury N.; Kirichek, Larisa M.; Medvedovsky, Adolf A.; Getman, Galina A.; Usenko, Jury D.; Sidelnikov, Viktor M.; Danilevsky, Nikolai F.; and Solsky, Yakov P., 4,455,312, Cl. 424-251.000.

Klockner-Humboldt-Deutz AG Zweigniederlassung Fahr: *See*—
Purrer, Josef, 4,454,785, Cl. 74-523.000.

Klueber, William J.: *See*—
Spamer, Alfred B.; and Klueber, William J., 4,455,269, Cl. 264-31.000.

Kluth, Hans-Jurgen, to Licentia Patent-Verwaltungs-GmbH. Video recorder. 4,455,580, Cl. 360-19.100.

Kluver, Leroy: *See*—
Ronayne, Ronald J.; and Kluver, Leroy, 4,454,707, Cl. 56-341.000.

Kluy, Werner: *See*—
Bussemeier, Bernd; Frohning, Carl D.; Horn, Gerhardt; and Kluy, Werner, 4,455,395, Cl. 518-717.000.

Knepper, Jay C.: *See*—
York, Earl D.; and Knepper, Jay C., 4,454,915, Cl. 166-259.000.

Kniese, Heiner: *See*—
Fink, Herbert; Kniese, Heiner; Suetterlin, Norbert; Mueller, Klaus; and Siol, Werner, 4,455,342, Cl. 428-265.000.

Knorpp, Eberhard: *See*—
Binz, Reiner; Knorpp, Eberhard; and von Sichart, Frithjof, 4,455,648, Cl. 370-66.000.

Kobayashi, Akio: *See*—
Isomura, Shigenori; Kondo, Toshio; Kodama, Katsuhiko; Kobayashi, Akio; and Sakakibara, Shuji, 4,454,847, Cl. 123-492.000.

Kobayashi, Herbert S.: *See*—
Villarreal, Salvador; Lenett, Stuart D.; Kobayashi, Herbert S.; and Pawlowski, James F., 4,455,680, Cl. 455-208.000.

Kobayashi, Hiroyuki: *See*—
Morishita, Mitsuharu; Kobayashi, Hiroyuki; and Fukui, Toyoaki, 4,455,525, Cl. 322-28.000.

Kobayashi, Masahiro: *See*—
Suzuki, Yoshitsugu; Iizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, 4,454,652, Cl. 29-863.000.
Yamane, Kazumasa; Kobayashi, Masahiro; and Takada, Masahiko, 4,455,407, Cl. 525-208.000.

Kobayashi, Nobuki: *See*—
Ishikawa, Koji; Ozawa, Hiroshi; Kobayashi, Nobuki; Kikuta, Yoshio; and Nakane, Kenichi, 4,455,360, Cl. 430-109.000.

Kobayashi, Seiichi: *See*—
Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Suzuki, Takeshi; Kinoshita, Kensaku; Mishima, Mannen; Katoh, Yoshinori; Kobayashi, Seiichi; Murakami, Manabu; and Yamada, Kouzi, 4,455,316, Cl. 424-274.000.

Kobayashi, Teiji: *See*—
Tomishima, Yoshio; Kobayashi, Teiji; Shibahara, Hiroshi; and Nojima, Yasuhiro, 4,455,413, Cl. 526-344.200.

Kobayasi, Masasi: *See*—
Noda, Kanji; Nakagawa, Akira; Yamagata, Tetsuya; Kobayasi, Masasi; Suenaga, Tadayoshi; Tokubuchi, Fumiaki; Noguchi, Kazuki; Yoshitake, Tadaaki; Tsuji, Masayoshi; and Ide, Hiroyuki, 4,455,146, Cl. 604-897.000.

Kocanowski, Stephen: *See*—
Gordon, Marvin; Lichtenstein, Joseph; and Kocanowski, Stephen, 4,455,139, Cl. 604-247.000.

Kodama, Hideyo; Niyama, Eisuke; Endo, Munehiro; and Kimura, Tomoaki, to Hitachi, Ltd. Continuous casting method. 4,454,908, Cl. 164-454.000.

Kodama, Katsuhiko: *See*—
Isomura, Shigenori; Kondo, Toshio; Kodama, Katsuhiko; Kobayashi, Akio; and Sakakibara, Shuji, 4,454,847, Cl. 123-492.000.

Koehmstedt, Paul L., to Battelle Memorial Institute. Self-contained exothermic applicator and process. 4,455,186, Cl. 156-273.900.

Koenck, Steven E., to Norand Corporation. Portable battery powered system. 4,455,523, Cl. 320-43.000.

Koenig & Bauer Aktiengesellschaft: *See*—
Barrois, Claus D.; and Dieterich, Philipp A., 4,454,813, Cl. 101-349.000.

Koenig, Karl-Heinz: *See*—
Schwendemann, Volker; and Koenig, Karl-Heinz, 4,455,260, Cl. 260-453.00P.

Koepper, Rudolf; and Rowold, Karl-Joachim, to Feinmechanische Werke Mainz GmbH. Active mechanical hydraulic control apparatus. 4,454,800, Cl. 91-51.000.

Kohno, Masaru: *See*—
Shinkai, Kazuteru; Kohno, Masaru; Nakagawa, Yukio; Tamaoki, Norimasa; and Saito, Kiyoshi, 4,454,767, Cl. 73-861.180.

Koike, Masato, to Shimadzu Corporation. Monochromator with concave grating. 4,455,088, Cl. 356-334.000.

Kojima, Kazuhiro; Ito, Haruaki; and Kubo, Hiroshi, to Showa Denko Kabushiki Kaisha. N-(Difluoromethoxy substituted phenyl)-dichloromaleimides used in agricultural and horticultural fungicidal methods. 4,455,315, Cl. 424-274.000.

Kojima, Tetsuro; Ishimaru, Shingo; Sugimoto, Naohiko; and Ikeda, Tadashi, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material containing a UV absorbing polymer latex. 4,455,368, Cl. 430-507.000.

Kokubu, Yoshikazu: *See*—
Funabashi, Masayuki; and Kokubu, Yoshikazu, 4,455,206, Cl. 204-181.00F.

Kokusan Kinzoku Kogyo Co., Ltd.: *See*—
Mochida, Haruo; and Shimizu, Keiichi, 4,455,588, Cl. 361-172.000.

Kolene Corporation: *See—*
Wood, William G.; and Pilznienski, John F., 4,455,251, Cl. 252-156.000.
Kollen, Wendell J.: *See—*
Jabarin, Saleh A.; and Kollen, Wendell J., 4,454,945, Cl. 206-524.300.
Komarek, Lawrence A.: *See—*
Pelley, Michael S.; Rohn, David R.; Komarek, Lawrence A.; and Grudowski, Raymond A., 4,455,621, Cl. 364-900.000.
Komiya, Yukiharu: *See—*
Miwa, Tadashi; Kimura, Kiyoshi; Komiya, Yukiharu; and Tarumi, Noriyoshi, 4,455,079, Cl. 355-3.0TR.
Kondo, Toshio: *See—*
Isomura, Shigenori; Kondo, Toshio; Kodama, Katsuhiko; Kobayashi, Akio; and Sakakibara, Shuji, 4,454,847, Cl. 123-492.000.
Kondo, Yoshihide: *See—*
Ishida, Nobuyoshi; Kondo, Yoshihide; Konishi, Kunihiko; and Kamio, Hiroyuki, 4,455,281, Cl. 422-171.000.
Kondo, Yoshikazu: *See—*
Inui, Tsuneo; Kuroda, Hitoshi; Hizuka, Kenji; Kunishige, Fumio; and Kondo, Yoshikazu, 4,455,355, Cl. 428-595.000.
Konishi, Kunihiko: *See—*
Ishida, Nobuyoshi; Kondo, Yoshihide; Konishi, Kunihiko; and Kamio, Hiroyuki, 4,455,281, Cl. 422-171.000.
Konishiroku Photo Industry Co., Ltd.: *See—*
Miwa, Tadashi; Kimura, Kiyoshi; Komiya, Yukiharu; and Tarumi, Noriyoshi, 4,455,079, Cl. 355-3.0TR.
Sasa, Nobumasa, 4,455,364, Cl. 430-299.000.
Konnai, Makoto: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,455,163, Cl. 71-86.000.
Konno, Tatsuo: *See—*
Fujino, Masahisa; Sunouchi, Akio; Konno, Tatsuo; and Suzuki, Ryuji, 4,455,072, Cl. 354-153.000.
Koper, James G.; and Ljung, Bo H. G., to Singer Company, The. Ring laser gyro cathode connection. 4,455,060, Cl. 339-252.00S.
Koppers International Canada Ltd.: *See—*
Taylor-Smith, Ernest J., 4,454,986, Cl. 238-369.000.
Koshio, Tatsukichi; and Okamoto, Osamu, to Nippon Electric Co., Ltd. Distance measuring equipment. 4,455,556, Cl. 343-7.300.
Kostan, Charles C.: *See—*
Fox, David H.; Kostan, Charles C.; and Casaceli, Frank B., 4,454,856, Cl. 123-617.000.
Kostin, Ivan M.: *See—*
Sizyakov, Viktor M.; Kaluzhsky, Nikolai A.; Badaiants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Isakov, Evgeny A.; Alexandrova, Zarya N.; Afanasiev, Valentin N.; Chernov, Vinetsy I.; Zhukov, Alexandr G.; Kutsenko, Viktor S.; Vysotskaya, Galina M.; Ostrovlyanchik, Evgenia S.; Mironov, Evgeny I.; Vladimirov, Pavel S.; Alexeev, Alexei I.; Finkelshtein, Leonid I., deceased; Finkelshtein, Nina J., administrator; and Finkelshtein, Julia L., administrator, 4,455,284, Cl. 423-119.000.
Kotera, Yoshinobu: *See—*
Ochi, Mitsutoshi; Kotera, Yoshinobu; and Sugiyama, Masaki, 4,455,347, Cl. 428-369.000.
Koumura, Noboru: *See—*
Niwa, Yukichi; Ohwada, Mitsutoshi; Ogino, Yasuo; Tanaka, Kazuo; and Koumura, Noboru, 4,455,065, Cl. 350-445.000.
Koyahata, Hiroshi, to Katoh Electrical Machinery Co., Ltd. Record playing device. 4,455,640, Cl. 369-216.000.
Kozhushko, Galina I.: *See—*
Portnyagina, Vera A.; Karp, Valentina K.; Barkova, Irina S.; Trinus, Fedor P.; Mokhort, Nikolai A.; Fadeicheva, Alexandra G.; Kozhushko, Galina I.; Ryabukha, Tatyana K.; Panteleimonov, Alexandr G.; Kljushin, Viktor V.; Dobrovolsky, Jury N.; Kirichek, Larisa M.; Medvedovsky, Adolf A.; Getman, Galina A.; Usenko, Jury D.; Sidelnikov, Viktor M.; Danilevsky, Nikolai F.; and Solsky, Yakov P., 4,455,312, Cl. 424-251.000.
Kraft, Robert E.: *See—*
Dean, Arthur L.; Kraft, Robert E.; and Marshall, Kenneth M., 4,455,496, Cl. 310-29.000.
Kraftwerk Union Aktiengesellschaft: *See—*
Klein, Heinrich; Pieper, Rudolf; and Weber, Eduard, 4,454,661, Cl. 34-57.00E.
Kranberg, Heinz E.: *See—*
Aichinger, Horst; and Kranberg, Heinz E., 4,455,669, Cl. 378-97.000.
Kranz, Eckart: *See—*
Findeisen, Kurt; and Kranz, Eckart, 4,455,264, Cl. 260-545.00R.
Kraus, Charles E., to Excelermatic Inc. Traction roller transmission with predetermined transmission ratio. 4,454,788, Cl. 74-798.000.
Krauser KFZ-Zubehor-Vertriebs GmbH: *See—*
Krauser, Michael, 4,454,970, Cl. 224-39.000.
Krauser, Michael, to Krauser KFZ-Zubehor-Vertriebs GmbH. Supporting arrangement. 4,454,970, Cl. 224-39.000.
Krauss, Theo; Herrmann, Ludwig; and Minde, Siegfried, to VEB Kombinat Textima. Apparatus for smoothing and drying damp laundry. 4,454,668, Cl. 38-11.000.
Kreetz, Johan R.: *See—*
Duncker, Michiel J.; and Kreetz, Johan R., 4,454,864, Cl. 126-433.000.
Kreuder, Hans J.: *See—*
Meyer, Rolf-Volker; Kreuder, Hans J.; and de Cleur, Eckhard, 4,455,425, Cl. 544-253.000.
Meyer, Rolf-Volker; Kreuder, Hans J.; and de Cleur, Eckhard, 4,455,426, Cl. 544-253.000.
Kreuter, Peter: *See—*
Pischinger, Franz; and Kreuter, Peter, 4,455,543, Cl. 335-266.000.
Krishnan, Ramamurthy G.: *See—*
Croteau, Denis; Caspar, Roman; Krishnan, Ramamurthy G.; Malashenko, Alexander; Bryce, Rodney H.; Soomet, Valdur; and Deperis, Giovanni, 4,455,197, Cl. 162-343.000.
Kriz, John S., to Perq Systems Corporation. Digitizer tablet. 4,455,451, Cl. 178-18.000.
Kromer, Philip F., III, to Racal Data Communications Inc. Data modem clock extraction circuit. 4,455,665, Cl. 375-110.000.
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Potthof, Erwin; and Kruger, Tilmann, 4,455,587, Cl. 361-160.000.
Krupick, Walter J.; Previte, Peter L.; and Cimera, Richard F., to Singer Company, The. Flexure suspended gyro utilizing dual salient pole magnets. 4,454,777, Cl. 74-5.460.
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Schmid, Karl; and Heinrichs, Bernhard, 4,454,959, Cl. 220-400.000.
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Kojima, Kazuhiro; Ito, Haruaki; and Kubo, Hiroshi, 4,455,315, Cl. 424-274.000.
Kuehn, Gerhard: *See—*
Conrad, Bernhard; Finkenzeller, Johann; Kuehn, Gerhard; and Lichtenberg, Wolfhart, 4,455,488, Cl. 250-385.000.
Kuehn, Scott L., to Champion International Corporation. Remote controlled slack pulling log skidding carriage. 4,454,951, Cl. 212-89.000.
Kuehnle, Manfred R.: *See—*
Weitzen, Edward H.; D'Amato, Salvatore F.; Fleming, Robert M.; Kuehnle, Manfred R.; Ekman, C. Frederick; Kruse, Jurgen; and Weber, Harold J., 4,455,039, Cl. 283-83.000.
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Ritter, Helmut; Paulus, Wilfried; Kuhle, Engelbert; and Genth, Hermann, 4,455,309, Cl. 424-250.000.
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Kunishige, Fumio: *See—*
Inui, Tsuneo; Kuroda, Hitoshi; Hizuka, Kenji; Kunishige, Fumio; and Kondo, Yoshikazu, 4,455,355, Cl. 428-595.000.
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Handa, Ryoji; Hosoda, Jun; Ariyama, Kenzo; Okushima, Osamu; and Kurashige, Nobuo, 4,455,411, Cl. 526-208.000.
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Funabashi, Masayuki; and Kokubu, Yoshikazu, 4,455,206, Cl. 204-181.00F.
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Egusa, Tomoyoshi; Miki, Yutaka; Kuroda, Masayuki; Fujimoto, Koshiro; and Niki, Motoharu, 4,454,640, Cl. 29-148.40A.
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Budich, Wolfgang; Gasper, Bertram; Kurth, Josef; Scharf, Karl-Gunter; and Wissinger, Waldemar, 4,455,398, Cl. 523-220.000.
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Walden, Jack M.; Eads, William D.; Cozzens, Ray J.; Bidwell, John L.; Jewett, Robert A.; Wilson, Martin S.; Griffin, Daniel J.; Kuseski, Robert E.; and Schulte, Louis T., 4,455,618, Cl. 364-900.000.
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Jakob, Willi; and Hornivius, Lothar, 4,455,133, Cl. 425-113.000.
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Coker, Thomas G.; LaConti, Anthony B.; and Balko, Edward N., 4,455,210, Cl. 204-283.000.

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Lahav, Noam, to Solmat Systems, Ltd. Method and apparatus for treating the surface of a body of liquid. 4,455,226, Cl. 210-170.000.

Lai, John T.: *See—*
Son, Pyong N.; and Lai, John T., 4,455,401, Cl. 524-91.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation: *See—*
Genies, Bernard, 4,455,014, Cl. 266-44.000.

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Broze, Guy; and Laitem, Leopold, 4,455,249, Cl. 252-95.000.

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Bhaskar, Kasi S.; Carlson, Alden J.; Couper, Alastair N.; Lambert, Dennis L.; and Scott, Marshall H., 4,455,654, Cl. 371-20.000.

Landis, Phillip S.: *See—*
Herd, Richard S.; and Landis, Phillip S., 4,455,242, Cl. 252-40.700.

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Lanzrath, Ralph A. Wind driven device and method of recovering wind energy. 4,455,491, Cl. 290-44.000.

Laporte Industries Limited: *See—*
Salter, David; and Scott, David, 4,455,288, Cl. 423-612.000.

La Prade, James N.; and Wondowski, Raymond S., to RCA Corporation. Microwave circuit interconnect system. 4,455,537, Cl. 333-33.000.

Larger, Nelson N. Method and apparatus for splitting logs. 4,454,902, Cl. 144-366.000.

Larikka, Leo, to Larikka, Leo. Steering apparatus for an autogenous cutting torch. 4,455,015, Cl. 266-54.000.

Larker, Hans: *See—*
Alderborn, Jan; and Larker, Hans, 4,455,275, Cl. 264-325.000.

Latoka Engineering, Inc.: *See—*
Honerkamp, Joseph D.; and Ebeling, Harold O., 4,455,157, Cl. 55-234.000.

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Heiland, Gerhard; and Laurs, Heinz, 4,455,378, Cl. 436-126.000.

Lausberg, Helmut, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Anchoring system for a sea station supported on floating bodies. 4,455,108, Cl. 405-202.000.

Lauver, Richard W., to United States of America, National Aeronautics and Space Administration. Chemical approach for controlling nadimide cure temperature and rate. 4,455,418, Cl. 528-322.000.

Lavene, Bernard, to Electronic Concepts, Inc. Means and a method for converting finished electrical components with terminal leads to elements having planar terminations. 4,455,591, Cl. 361-310.000.

Layrisse, Ignacio: *See—*
Calderon, Jose L.; and Layrisse, Ignacio, 4,455,221, Cl. 208-347.000.

LCC.CICE-Compagnie Europeene de Composants Electroniques: *See—*
Sibille, Rene ; and Gaudry, Pierre, 4,455,544, Cl. 336-65.000.

Le Moulage Automatique: *See—*
Juillet, Jacques; Olmi, Eugenio; and Stephan, Michel, 4,454,958, Cl. 220-339.000.

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Schubert, John C.; and LeDuc, Edward C., 4,455,272, Cl. 264-53.000.

Lee, Arnold S. J. EEG With audio output. 4,454,886, Cl. 128-732.000.

Lee, Biing-Lin, to B. F. Goodrich Company, The. Heterogeneous rubber compositions made from chemically similar blends. 4,455,399, Cl. 523-351.000.

Lee, Joseph Y. M.; and Grimm, Gary E., to Hughes Aircraft Company. Polycrystalline semiconductor resistor having a noise reducing field plate. 4,455,567, Cl. 357-51.000.

Lee, Pang-Kai; Hickam, William M.; and Lindsay, William T., Jr., to Westinghouse Electric Corp. Conductivity sensor for use in steam turbines. 4,455,530, Cl. 324-446.000.

Lee, William H.: *See—*
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Leesona Corporation: *See—*
Jones, Harold A.; Teixeira, Manuel G.; and Verrier, Arthur N., 4,454,997, Cl. 242-47.010.

Le Gars, Jacques; Losset, Martine; and Remery, Michel, to U.S. Philips Corporation. Apparatus comprising a digital processor and function test means. 4,455,653, Cl. 371-20.000.

LeGrand, Donald G.; and Banino, George M., to General Electric Company. Method of upgrading rock and treated rock obtained therefrom. 4,455,170, Cl. 106-97.000.

Leibowitz, Herman M., to Mechanical Technology Incorporated. Heat pump. 4,454,720, Cl. 60-648.000.

Leigh-Monstevens, Keith V.: *See—*
Nix, Richard; and Leigh-Monstevens, Keith V., 4,454,632, Cl. 24-16.0PB.

Leiner, Robert L.; and Salmon, John K., to Otis Elevator Company. Elevator door operator having a variable pitch lead screw. 4,454,931, Cl. 187-52.0LC.

Leland Stanford Junior University, The Board of Trustees of the: *See—*
Byer, Robert L., 4,455,657, Cl. 372-18.000.

Lemay, Richard A.: *See—*
Cushing, David E.; Lemay, Richard A.; Stanley, Philip E.; and Woods, William E., 4,455,606, Cl. 364-200.000.

Lemelson, Jerome H. Synthetic speech communicating system and method. 4,455,551, Cl. 340-539.000.

Lenett, Stuart D.: *See—*
Villarreal, Salvador; Lenett, Stuart D.; Kobayashi, Herbert S.; and Pawlowski, James F., 4,455,680, Cl. 455-208.000.

Lenssen, Paul: *See—*
Cuylits, Jacques; Lenssen, Paul; and Chatelle, Philippe P., 4,454,819, Cl. 104-245.000.

Lenzmann, Heinrich: *See—*
Arnold, Dieter; Bartels, Jorg; Lenzmann, Heinrich; Jacobsen, Gunter; Wendt, Heinz; and Stoltenberg, Manfred, 4,455,439, Cl. 568-302.000.

Lepist, Enn. Cropping kit. 4,455,082, Cl. 355-75.000.

Lesko, Robert J., to HID Systems, Inc. High intensity discharge ballast with hot restrike performance. 4,455,510, Cl. 315-263.000.

Less, Thomas M. Flux recovery device. 4,455,222, Cl. 209-12.000.

Lessmann, Gerald G.: *See—*
Ecer, Gunes M.; Stol, Israel; and Lessmann, Gerald G., 4,455,471, Cl. 219-125.120.

Leunig, Ernst, to Volkswagenwerk Aktiengesellschaft. Method for testing a carburetor. 4,454,755, Cl. 73-118.000.

Levesque, Guy: *See—*
Detienne, Jean-Louis; Levesque, Guy; and Tozzolino, Pierre, 4,455,262, Cl. 260-502.600.

Levine, Fred. H-Shaped bracket with slidable reinforcing nut. 4,455,011, Cl. 248-646.000.

Lewis, David M.; Brady, Peter R.; Cookson, Peter G.; and Fincher, Keith W., to I.W.S. Nominee Company, Limited; and Commonwealth Scientific and Industrial Research Organization. Transfer printing. 4,455,147, Cl. 8-471.000.

Lewis, Donald F., deceased; and by Lewis, Sheri, administrator. Device to locate communication satellites. 4,454,658, Cl. 33-268.000.

Lewis, Donald J., to Bendix Corporation, The. Pressure compensated fuel injector. 4,454,990, Cl. 239-585.000.

Lewis, Robert M.; and Slaugh, Lynn H., to Shell Oil Company. Magnesium hydride modified aluminum/siliceous compositions. 4,455,389, Cl. 502-232.000.

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Leyden, Roger J., to Se-Kure Controls, Inc. Alarm system sensing and triggering apparatus. 4,455,464, Cl. 200-61.930.

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Maltby, Robert E., Jr.; and Sikorski, James T., 4,454,972, Cl. 225-96.500.

Licentia Patent-Verwaltungs-GmbH: *See—*
Kluth, Hans-Jurgen, 4,455,580, Cl. 360-19.100.

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Conrad, Bernhard; Finkenzeller, Johann; Kuehn, Gerhard; and Lichtenberg, Wolfhart, 4,455,488, Cl. 250-385.000.

Lichtenstein, Joseph: *See—*
Gordon, Marvin; Lichtenstein, Joseph; and Kocanowski, Stephen, 4,455,139, Cl. 604-247.000.

Lieberman, Bernard: *See—*
Warner, Glenn H.; Bhasin, Madan M.; and Lieberman, Bernard, 4,455,392, Cl. 502-347.000.

Liebler, Ralf, to Rohm GmbH. Silicone resin coating agent. 4,455,403, Cl. 524-300.000.

Liebman, Steve, to Namecraft Manufacturing Corp. Method of producing grouped symbols. 4,455,113, Cl. 409-84.000.

Liechty, Deryll, to Ex-Cell-O Corporation. Apparatus for compressing a retainer ring to assembly size and retainer ring compressed thereby. 4,454,642, Cl. 29-229.000.

Lifshin, Eric; Cargioli, Joseph D.; Schroder, Stephen J.; and Wong, Joe, to General Electric Company. Method of transfer lamination of copper thin sheets and films. 4,455,181, Cl. 156-150.000.

Lillibridge, Herbert J.: *See—*
Schwarzmann, Russell A.; and Lillibridge, Herbert J., 4,455,122, Cl. 416-190.000.

Lin, James G.: *See—*
Hoppmann, Kurt H.; Lin, James G.; and Hoppmann, Peter G., 4,455,067, Cl. 353-69.000.

Linderoth, Hans. Safety device for the vehicular transport of a person travelling in a wheelchair. 4,455,046, Cl. 296-65.00R.

Lindsay, William T., Jr.: *See—*
Lee, Pang-Kai; Hickam, William M.; and Lindsay, William T., Jr., 4,455,530, Cl. 324-446.000.

Lindstedt, Ernst L.; and Hisey, Robert W., to Cooper Industries, Inc. Drill pipe handling and storage apparatus. 4,455,116, Cl. 414-22.000.

Lion Corporation: *See—*
Tsutsui, Tatsuhiko; Sema, Toru; and Unezawa, Tsuneo, 4,455,636, Cl. 369-72.000.

Lipo, Thomas A., to General Electric Company. Current source inverter bed induction motor drive. 4,455,522, Cl. 318-809.000.

Lissot, Jean: *See*—
Guillemin, Claude; Lissot, Jean; and Vasseur, Jean-Pierre, 4,454,749, Cl. 73-23.100.
Liston, Thomas V., to Chevron Research Company. Succinimide complexes of borated fatty acid esters of glycerol and lubricating oil compositions containing same. 4,455,243, Cl. 252-49.600.
Little, Richard E., to GTE Business Communication Systems Inc. Internodal conference call administrator. 4,455,455, Cl. 179-7.10R.
Ljung, Bo H. G.: *See*—
Koper, James G.; and Ljung, Bo H. G., 4,455,060, Cl. 339-252.00S.
Lloyd, Ronald; and Patchell, Albert G. Production of net from synthetic polymeric film. 4,455,337, Cl. 428-134.000.
Lobanov, Alexandr B.: *See*—
Filippov, Vladimir I.; Parshin, Nikolai I.; Barabanov, Igor V.; Marmer, Eduard N.; Puzanov, Alexandr F.; Lobanov, Alexandr B.; Usaty, Jury P.; Gerasimov, Vladimir I.; Tikhonov, Arkady K.; and Turulin, Viktor N., 4,455,177, Cl. 148-155.000.
Lockheed Corporation: *See*—
Whitaker, Robert H., Sr., 4,455,004, Cl. 244-90.00R.
Lodge, Arthur S. Extended range pressure transducers. 4,454,765, Cl. 73-724.000.
Loersch, Joseph F.: *See*—
Neal, James W.; and Loersch, Joseph F., 4,454,740, Cl. 72-53.000.
Logicon, Inc.: *See*—
Olson, Roy H.; Petterson, Tor H.; and Roberts, William E., 4,455,066, Cl. 353-26.00R.
Lonati, Francesco, to Lonati S.p.A. Circular knitting machine of the cylinder and dial type, in particular for knitting hosiery. 4,454,729, Cl. 66-28.000.
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Lonati, Francesco, 4,454,729, Cl. 66-28.000.
Long, Franklin A.: *See*—
Wylegala, Kenneth B.; Fischer, James R.; Long, Franklin A.; and Golob, Deborah L., 4,455,252, Cl. 252-186.260.
Loonen, Antonie R. M., to U.S. Philips Corporation. Device for forming an image by means of ultrasound. 4,455,630, Cl. 367-103.000.
Loos, Horst-Rudolf, to Vibro-Meter SA. Radial force measuring cell. 4,454,769, Cl. 73-862.040.
Lorenz, David B., to Marathon Manufacturing Company. Barge hull for offshore drilling rigs. 4,455,109, Cl. 405-203.000.
Lortec Power Systems, Inc.: *See*—
Bobry, Howard H., 4,455,600, Cl. 363-139.000.
Loskorn, Richard A.; Biehl, Philip D.; and Catiller, Robert D., to Burroughs Corporation. Bit-oriented line adapter system. 4,455,622, Cl. 364-900.000.
Losset, Martine: *See*—
Le Gars, Jacques; Losset, Martine; and Remery, Michel, 4,455,653, Cl. 371-20.000.
Louzil, Friedrich. Ink jet printing head and method of manufacturing such an ink jet printing head. 4,455,560, Cl. 346-140.00R.
Love, Mahlon L.; and Corkery, Leon J., to Deere & Company. Variable drive for a harvester functional element. 4,454,787, Cl. 74-781.00R.
Lucas Industries plc: *See*—
Brotherston, Colin P., 4,455,126, Cl. 417-252.000.
Luebke, Ralph C., to Moore & Sons, Inc. Truck for transporting boxes of poultry. 4,454,837, Cl. 119-12.000.
Lundblad, John L.: *See*—
Mitra, Gautam; and Lundblad, John L., 4,455,301, Cl. 424-101.000.
Wallace, Donald G.; Schneider, Phillip M.; and Lundblad, John L., 4,455,300, Cl. 424-101.000.
Lundstrom, Robert W.: *See*—
Shpits, Raisa; Lundstrom, Robert W.; and Sannel, Benjamin H., 4,455,077, Cl. 354-299.000.
Lutes, Olin S., to Honeywell Inc. Thin film memory with magnetoresistive read-out. 4,455,626, Cl. 365-158.000.
Luthardt, Gunther: *See*—
Sartor, Bruno; Jager, Werner; Ebinger, Horst; Luthardt, Gunther; and Bergmann, Walter, 4,455,207, Cl. 204-192.00E.
Lydiate, Jack; and Marchese, Anthony L., to ICI Australia Limited. Process for polymerization using monoperoxyoxalic acid diesters. 4,455,412, Cl. 526-227.000.
Lynch, Michael W.; and Pullukat, Thomas J., to Chemplex Company. Polymerization catalyst. 4,455,386, Cl. 502-104.000.
M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See*—
Lausberg, Helmut, 4,455,108, Cl. 405-202.000.
Machler, Raymond C.: *See*—
Williams, Albert J., Jr.; and Machler, Raymond C., 4,455,558, Cl. 346-1.100.
Mackay, Malcolm D.: *See*—
Lamb, John G.; and Mackay, Malcolm D., 4,455,159, Cl. 65-3.110.
MacKew, James. Modular support system. 4,455,008, Cl. 248-447.200.
MacNeil, Arden B. Adjustable-length, combined golf spike receptacles and receptacle anchoring devices. 4,454,664, Cl. 36-127.000.
Madi, Jeno: *See*—
Ivony, Jozsef; Ratsko, Istvan; Karaszy, Gyorgy; and Madi, Jeno, 4,455,035, Cl. 280-432.000.
Maekawa, Takashi: *See*—
Sakitani, Katsumi; Maekawa, Takashi; Fujimoto, Satoru; Tajima, Tetsuro; and Hiroyasu, Makoto, 4,455,129, Cl. 418-82.000.
Magidson, Mark: *See*—
Huber, Otto L.; and Magidson, Mark, 4,454,881, Cl. 128-206.150.
Magnusson, Carl-Gustaf M.; Collet-Cassart, Daniel; and Masson, Pierre L., to International Institute of Cellular and Molecular Pathology. Immunoassay of proteins. 4,455,381, Cl. 436-543.000.
Maguire, Stephen A., to Du Pont de Nemours, E. I., and Company. Adjustable imbalance detector for a centrifuge. 4,455,461, Cl. 200-61.45R.
Mahler, George D., to Washington Research Foundation. Rotary ultrasonic scan head including fluid drive. 4,454,763, Cl. 73-639.000.
Maines, Robert Q., to R. J. Harvey Instrument Corp. Photometric methods for counting the particulate components of blood. 4,455,376, Cl. 436-63.000.
Malamoud, Jean G., to S.T. Dupont. Writing instrument having a non-rotatable cap for barrel removal. 4,455,101, Cl. 401-243.000.
Malashenko, Alexander: *See*—
Croteau, Denis; Caspar, Roman; Krishnan, Ramamurthy G.; Malashenko, Alexander; Bryce, Rodney H.; Soomet, Valdur; and Deperis, Giovanni, 4,455,197, Cl. 162-343.000.
Malden, Ancile E., to United States of America, Navy. Flicker free stretched grams. 4,455,572, Cl. 358-160.000.
Malone, Bradley P.: *See*—
Settineri, William J.; Charles, John G.; Hinkel, Jerald J.; and Malone, Bradley P., 4,455,175, Cl. 134-5.000.
Maltby, Robert E., Jr.; and Sikorski, James T., to Libbey-Owens-Ford Company. Method of and apparatus for severing glass. 4,454,972, Cl. 225-96.500.
Manchem Limited: *See*—
Holland, Frank S., 4,455,208, Cl. 204-261.000.
Mankey, Harry S.: *See*—
Oswald, Norman D.; Franklin, Carl M.; Gutzler, Marc H.; and Mankey, Harry S., 4,454,925, Cl. 180-22.000.
Mann, Irwin; and Hecker, Richard L., to Med-Con, Inc. Ankle-foot orthosis. 4,454,871, Cl. 128-80.00H.
Mannbro, Rolf. Arrangement for rotating equipment mounted on excavating machines. 4,454,665, Cl. 37-103.000.
Mantey, John P.: *See*—
Colglazier, Donald F.; Janssen, Donovan M.; Mantey, John P.; and Valent, James A., 4,455,018, Cl. 271-227.000.
Manzelli, Giorgio. Modular member for forming composite false-ceilings. 4,454,698, Cl. 52-581.000.
Marathon Manufacturing Company: *See*—
Lorenz, David B., 4,455,109, Cl. 405-203.000.
Marchese, Anthony L.: *See*—
Lydiate, Jack; and Marchese, Anthony L., 4,455,412, Cl. 526-227.000.
Margolin, George D. Digitizing tablet. 4,455,450, Cl. 178-18.000.
Mariani, Remo, to Thomas & Betts Corporation. Insulation piercing terminal. 4,455,057, Cl. 339-97.00C.
Marizy, Georges: *See*—
Brancaz, Jean; and Marizy, Georges, 4,455,166, Cl. 75-60.000.
Markham, David; Brown, Clifford G.; and Simon, John M., to Michigan State University. Process of extracting a metal value. 4,455,234, Cl. 210-638.000.
Marlett, Everett M., to Ethyl Corporation. Process for producing substituted pyrroles. 4,455,433, Cl. 548-531.000.
Marmer, Eduard N.: *See*—
Filippov, Vladimir I.; Parshin, Nikolai I.; Barabanov, Igor V.; Marmer, Eduard N.; Puzanov, Alexandr F.; Lobanov, Alexandr B.; Usaty, Jury P.; Gerasimov, Vladimir I.; Tikhonov, Arkady K.; and Turulin, Viktor N., 4,455,177, Cl. 148-155.000.
Marquess, Gerald E.; and Nell, David J. Electric furnace for continously heating and regenerating spent activated carbon. 4,455,282, Cl. 422-199.000.
Marquis, Robert P.; and Weileder, Peter, to Plastech, Inc. Rigid and compressible dye tubes. 4,454,734, Cl. 68-198.000.
Marshall, Kenneth M.: *See*—
Dean, Arthur L.; Kraft, Robert E.; and Marshall, Kenneth M., 4,455,496, Cl. 310-29.000.
Marteau, Raymond; and Plaignaud, Marcel R. Movable scaffold for buildings. 4,454,928, Cl. 182-36.000.
Martin, Brian D., to Ford Motor Company. Latch assembly. 4,455,049, Cl. 297-379.000.
Martin, Charles L., to Raychem Corporation. Heat recoverable composite coupling device with tapered insert. 4,455,041, Cl. 285-369.000.
Martinelli, Ramon U.: *See*—
Goodman, Alvin M.; and Martinelli, Ramon U., 4,455,565, Cl. 357-23.400.
Martino, Ronald J., to Bausch & Lomb Incorporated. High intensity illumination light table with attenuating means coupled to rhomboid arms. 4,455,592, Cl. 362-97.000.
Martino, Ronald J.; and Shawcross, Alfred L., to Bausch & Lomb Incorporated. High intensity illumination light table with attenuating and reflecting means coupled to rhomboid arms. 4,455,593, Cl. 362-97.000.
Martins, Agusto B.; and Amkraut, Alfred A., to Alza Corporation. Method of coadministering an antigen and an immunopotentiator. 4,455,142, Cl. 604-890.000.
Martz, Lyle F.; Kiscaden, Roy W.; and Uram, Robert, to Westinghouse Electric Corp. Gas turbine and steam turbine combined cycle electric power generating plant having a coordinated and hybridized control system and an improved factory based method for making and testing combined cycle and other power plants and control systems therefor. 4,455,614, Cl. 364-494.000.
Marumoto, Hideki: *See*—
Yanagida, Seiichi; Takeuchi, Motohiko; and Marumoto, Hideki, 4,455,582, Cl. 360-77.000.
Maruzen Oil Co., Ltd.: *See*—
Satake, Takeo; Ishigami, Masahisa; Arimoto, Kunio; Matsuba, Yorishige; Inoue, Yoshikazu; Tanaka, Yusuke; and Kanda, Kohei, 4,455,149, Cl. 44-51.000.

Marvel Specialty Company: *See*—
Gregory, Clifton; and Campbell, Lester W., 4,454,730, Cl. 66-149.00S.

Masco Corporation of Indiana: *See*—
Fathauer, George H.; and Williamson, Warren L., 4,455,679, Cl. 455-165.000.

Massey, Raymond D.; and Newsam, Leonard, to Zip Heaters (Aust) Pty. Limited. Electric boiling water heater. 4,455,477, Cl. 219-328.000.

Masson, Pierre L.: *See*—
Magnusson, Carl-Gustaf M.; Collet-Cassart, Daniel; and Masson, Pierre L., 4,455,381, Cl. 436-543.000.

Masters, David A., to Imperial Clevite Inc. Superregenerative radio receiver. 4,455,682, Cl. 455-300.000.

Masters, Richard M.: *See*—
Sharp, Harper E.; Spiegel, Leo; Masters, Richard M.; Howatt, John R.; and Walker, Gary E., 4,454,756, Cl. 73-151.000.

Masuda, Hiroo: *See*—
Masuhara, Toshiaki; Minato, Osamu; Shimohigashi, Katsuhiro; Masuda, Hiroo; Sunami, Hideo; Sakai, Yoshio; Kamigaki, Yoshiaki; Takeda, Eiji; and Hagiwara, Yoshimune, 4,455,495, Cl. 307-44.000.

Masuhara, Toshiaki; Minato, Osamu; Shimohigashi, Katsuhiro; Masuda, Hiroo; Sunami, Hideo; Sakai, Yoshio; Kamigaki, Yoshiaki; Takeda, Eiji; and Hagiwara, Yoshimune, to Hitachi, Ltd. Programmable semiconductor integrated circuitry including a programming semiconductor element. 4,455,495, Cl. 307-44.000.

Masui, Shoichi; Oonari, Mikihiko; Yamanaka, Kunio; and Takaki, Masaoki, to Hitachi, Ltd. Interactive equipment for computer programming by linkage of labeled block representations of arithmetic/-logical subprograms. 4,455,619, Cl. 364-900.000.

Mathieu, Jean-Pol: *See*—
Cailliau, Gerard M.; and Mathieu, Jean-Pol, 4,454,802, Cl. 92-158.000.

Matier, William L., to American Hospital Supply Corporation. Method for treating glaucoma by the topical administration of selectively metabolized beta-blocking agents. 4,455,317, Cl. 424-309.000.

Matsuba, Yorishige: *See*—
Satake, Takeo; Ishigami, Masahisa; Arimoto, Kunio; Matsuba, Yorishige; Inoue, Yoshikazu; Tanaka, Yusuke; and Kanda, Kohei, 4,455,149, Cl. 44-51.000.

Matsuda, Yoshihiko: *See*—
Suzuki, Yukio; and Matsuda, Yoshihiko, 4,454,846, Cl. 123-489.000.

Matsumoto, Katsutoshi, to Dainippon Screen Mfg. Co., Ltd. Apparatus for lithography or intaglio printing. 4,454,810, Cl. 101-141.000.

Matsumoto, Yukio; Aoshima, Terutaka; and Matsuo, Katsuharu, to Tokyo Shibaura Denki Kabushiki Kaisha. Rice cooker-warmer. 4,455,480, Cl. 219-497.000.

Matsuo, Katsuharu: *See*—
Matsumoto, Yukio; Aoshima, Terutaka; and Matsuo, Katsuharu, 4,455,480, Cl. 219-497.000.

Matsuoka, Yoshitaka: *See*—
Shimazoe, Michitaka; and Matsuoka, Yoshitaka, 4,454,771, Cl. 73-862.680.

Matsuyama, Kiyoshi; Ochi, Kenji; Ogawa, Hiroyuki; and Suzuki, Takatoshi, to Sumitomo Chemical Company, Limited. Granules with a narrow particle size distribution comprising filler, crystalline polyolefin powder and binder. 4,455,344, Cl. 428-327.000.

Matsuyama, Shigeo: *See*—
Syukuda, Yukio; Watanabe, Hideo; and Matsuyama, Shigeo, 4,455,297, Cl. 424-92.000.

Matsuyama, Sigeru: *See*—
Sasaki, Ken; Matsuyama, Sigeru; Yoshino, Tsunehiro; and Miyazaki, Katuhiro, 4,455,185, Cl. 156-250.000.

Matta, Joseph E.; and Harris, Jeffrey L., to United States of America, Army. Extrudate swell rheometer and method of using same. 4,454,751, Cl. 73-56.000.

Matthews, Frank H. Stove top grill. 4,454,805, Cl. 99-400.000.

Matui, Akira: *See*—
Aoki, Naohisa; and Matui, Akira, 4,455,639, Cl. 369-147.000.

Mauer, John L., IV: *See*—
Joy, Richard C.; Kemlage, Bernard M.; and Mauer, John L., IV, 4,454,646, Cl. 29-576.00W.
Joy, Richard C.; Kemlage, Bernard M.; and Mauer, John L., IV, 4,454,647, Cl. 29-576.00W.

Maurice, Terrence J.; Murray, Edward D.; and Agnes, Jennifer M., to General Foods Inc. Simulated adipose tissue. 4,455,318, Cl. 426-104.000.

Mayer, Hans G. Navigational angle-measurement device. 4,454,654, Cl. 33-1.00N.

Mayer, Siegfried: *See*—
Dworak, Wilhelm; Mayer, Siegfried; Muller, Karl-Heinz; Talmon, Wolfgang; and Wolff, Gunter, 4,455,130, Cl. 418-132.000.

Maytag Company, The: *See*—
Burkland, Charles W.; and Noe, William J., 4,454,732, Cl. 68-3.00R.

McCartney, Thomas, to ONEAC Corporation. High voltage filtering and protection circuit. 4,455,586, Cl. 361-56.000.

McChesney, John L.; and French, Ballard, to Xerox Corporation. Liquid developer apparatus. 4,454,833, Cl. 118-651.000.

McCormick, E. Scott: *See*—
Sintim-Damoa, Kwame; Reddy, Srinivasa S. N.; and McCormick, E. Scott, 4,455,202, Cl. 204-68.000.

McCulloch, Michael G., to Carnation Company. Apparatus for incorporating additives in extruded foods. 4,454,804, Cl. 99-348.000.

McDaniel, John M.; and Noblitt, Niles L., to Biomet, Inc. Prosthesis formation having solid and porous polymeric components. 4,454,612, Cl. 3-1.913.

McDonnell Douglas Corporation: *See*—
Hsia, Yukun, 4,454,648, Cl. 29-576.00B.

McFarlane, Stuart J.; and Croft, John E. Pharmaceutical preparations with gastro-protective action. 4,455,298, Cl. 424-95.000.

McGhie, James R., to American Hoist & Derrick Company. Means of removably mounting an outrigger. 4,454,952, Cl. 212-189.000.

McKiel, Frank A., Jr., to Rockwell International Corporation. Test method and device for FM transmitter. 4,455,678, Cl. 455-115.000.

McKinnie, Bonnie G.; and Robinson, Gene C., to Ethyl Corporation. Mixed dialkylmagnesium. 4,455,387, Cl. 502-153.000.

McNeely, John F.: *See*—
Henry, Walter B.; McNeely, John F.; and Owen, Harrold D., 4,454,814, Cl. 102-200.000.

McPherson, James O.: *See*—
Efron, Edward; McPherson, James O.; and Kim, Young B., 4,455,634, Cl. 369-58.000.

Mead Corporation, The: *See*—
Spamer, William S., 4,454,948, Cl. 211-49.00D.
Ullman, John E., 4,454,704, Cl. 53-76.000.

Mears, Dana C., to University of Pittsburgh. Pelvic fixation plate and method of implanting same. 4,454,876, Cl. 128-92.00D.

Meatto, Franklin: *See*—
Pilpel, Edward; and Meatto, Franklin, 4,455,037, Cl. 280-610.000.

Mechanical Technology Incorporated: *See*—
Leibowitz, Herman M., 4,454,720, Cl. 60-648.000.
Pinkus, Oscar; and Wilcock, Donald F., 4,455,026, Cl. 277-1.000.

Med-Con, Inc.: *See*—
Mann, Irwin; and Hecker, Richard L., 4,454,871, Cl. 128-80.00H.

Medical Laboratory Automation, Inc.: *See*—
Scordato, Richard E., 4,454,752, Cl. 73-64.100.

Medisearch PR, Inc.: *See*—
Whitney, John, 4,454,615, Cl. 5-449.000.

Medtronic, Inc.: *See*—
Sorenson, Paul D., 4,454,764, Cl. 73-642.000.

Medvedovsky, Adolf A.: *See*—
Portnyagina, Vera A.; Karp, Valentina K.; Barkova, Irina S.; Trinus, Fedor P.; Mokhort, Nikolai A.; Fadeicheva, Alexandra G.; Kozhushko, Galina I.; Ryabukha, Tatyana K.; Panteleimonov, Alexandr G.; Kljushin, Viktor V.; Dobrovolsky, Jury N.; Kirichek, Larisa M.; Medvedovsky, Adolf A.; Getman, Galina A.; Usenko, Jury D.; Sidelnikov, Viktor M.; Danilevsky, Nikolai F.; and Solsky, Yakov P., 4,455,312, Cl. 424-251.000.

Meidel, Herbert, to Heckler & Koch GmbH. Automatic safety device for handguns. 4,454,673, Cl. 42-70.00F.

Meier, Werner, to Sulzer Brothers Ltd. Packing for an exchange column. 4,455,339, Cl. 428-185.000.

Meiji Seika Kaisha, Ltd.: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,455,163, Cl. 71-86.000.

Meisel, William H.: *See*—
Born, Ellis H.; Meisel, William H.; and Wolfe, Paul B., 4,455,124, Cl. 417-218.000.

Melamed, Sidney: *See*—
Amick, David R.; Melamed, Sidney; and Novak, Ronald W., 4,455,402, Cl. 524-295.000.

Messori, Pier P., to Fiat Auto S.p.A. Volumetric compressor of the roots type. 4,455,132, Cl. 418-206.000.

Metal Box Limited: *See*—
Jenkins, Leonard A., 4,455,328, Cl. 427-224.000.

Metretek, Incorporated: *See*—
Parasekvakos, Theodoros G.; and Bushma, W. Thomas, 4,455,453, Cl. 179-2.0AM.

Meyer, Gene A.; and Peck, Robert E., to Chandler Evans Inc. Pulse width modulated fuel metering system. 4,454,713, Cl. 60-39.281.

Meyer, Hans R.; and Siegrist, Max, to Ciba-Geigy Corporation. N-Acyl-o-phenylenediamines. 4,455,436, Cl. 549-467.000.

Meyer, Rolf-Volker; Kreuder, Hans J.; and de Cleur, Eckhard, to Bayer Aktiengesellschaft. Bicyclic amidine-isocyanate adducts. 4,455,425, Cl. 544-253.000.

Meyer, Rolf-Volker; Kreuder, Hans J.; and de Cleur, Eckhard, to Bayer Aktiengesellschaft. Tetrahydropyrimidine-isocyanate addition products. 4,455,426, Cl. 544-253.000.

Michaels, Alan S., to ALZA Corporation. Dispenser constructed with semipermeable polymer-hydrophilic polymer wall. 4,455,144, Cl. 604-892.000.

Michaels of Oregon Co.: *See*—
Ives, Robert K., 4,454,675, Cl. 42-85.000.

Michelson, Herbert D.: *See*—
Gater, Roger A.; and Michelson, Herbert D., 4,454,839, Cl. 122-333.000.

Michigan State University: *See*—
Markham, David; Brown, Clifford G.; and Simon, John M., 4,455,234, Cl. 210-638.000.

Micromeritics Instrument Corporation: *See*—
Webb, Paul A., Jr.; Small, Alan H.; and Ball, Dean M., 4,455,084, Cl. 356-72.000.

Mijioka, Yoshiaki; Yamamoto, Kouichi; Suzuki, Taihei; and Mukaemachi, Takuji, to Hitachi, Ltd. Back-up control system implemented with a redundancy scheme for protection against failure. 4,455,645, Cl. 370-16.000.

Miki, Yutaka: *See*—
Egusa, Tomoyoshi; Miki, Yutaka; Kuroda, Masayuki; Fujimoto, Koshiro; and Niki, Motoharu, 4,454,640, Cl. 29-148.40A.
Miller, Allen W.; Carroll, Cornelius F.; and Abernathy, Lloyd E. Peep sight for a bow. 4,454,857, Cl. 124-87.000.
Miller, Daniel G., to United States of America, Air Force. FET Switching regulator. 4,455,526, Cl. 323-282.000.
Miller, Jack V.; and Blosser, Stephen T., to Boettner, Andrew; and Boettner, Mrs. Andrew. Portable nebulizer or mist producing device. 4,454,877, Cl. 128-200.210.
Miller, Marion H. Venturi-type shunt flowmeter. 4,454,758, Cl. 73-202.000.
Milliken Research Corporation: *See*—
Warner, Charles E.; and Schroder, William J., 4,454,710, Cl. 57-354.000.
Minamida, Kazukiyo, to Kabushiki Kaisha Ishida Koki Seisakusho. Combinatorial weighing apparatus. 4,454,924, Cl. 177-25.000.
Minato, Osamu: *See*—
Masuhara, Toshiaki; Minato, Osamu; Shimohigashi, Katsuhiro; Masuda, Hiroo; Sunami, Hideo; Sakai, Yoshio; Kamigaki, Yoshiaki; Takeda, Eiji; and Hagiwara, Yoshimune, 4,455,495, Cl. 307-44.000.
Minde, Siegfried: *See*—
Krauss, Theo; Herrmann, Ludwig; and Minde, Siegfried, 4,454,668, Cl. 38-11.000.
Miner Enterprises, Inc.: *See*—
Fischer, Robert T., 4,454,822, Cl. 105-250.000.
Minnesota Mining & Manufacturing Company: *See*—
Birkeland, Stephen P., 4,455,076, Cl. 354-275.000.
Dillon, Kenneth R.; and Terchek, Richard L., 4,455,354, Cl. 428-568.000.
Patterson, Richard A., 4,454,956, Cl. 220-214.000.
Pokorny, Richard J., 4,455,348, Cl. 428-377.000.
Minolta Camera Kabushiki Kaisha: *See*—
Izuhara, Koichi, 4,455,068, Cl. 354-412 000.
Sugiura, Masamichi; Kitagawa, Tsuneo; and Yoshida, Keiji, 4,455,080, Cl. 355-14.0SH.
Tominaga, Shinji; and Nakamura, Ikushi, 4,455,073, Cl. 354-173.110.
Mironov, Evgeny I.: *See*—
Sizyakov, Viktor M.; Kaluzhsky, Nikolai A.; Badaiants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Isakov, Evgeny A.; Alexandrova, Zarya N.; Afanasiev, Valentin N.; Chernov, Vinetsy I.; Zhukov, Alexandr G.; Kutsenko, Viktor S.; Vysotskaya, Galina M.; Ostrovlyanchik, Evgenia S.; Mironov, Evgeny I.; Vladimirov, Pavel S.; Alexeev, Alexei I.; Finkelshtein, Leonid I., deceased; Finkelshtein, Nina J., administrator; and Finkelshtein, Julia L., administrator, 4,455,284, Cl. 423-119.000.
Mishima, Mannen: *See*—
Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Suzuki, Takeshi; Kinoshita, Kensaku; Mishima, Mannen; Katoh, Yoshinori; Kobayashi, Seiichi; Murakami, Manabu; and Yamada, Kouzi, 4,455,316, Cl. 424-274.000.
Mitchell, Donald A. Door activating control circuitry. 4,455,517, Cl. 318-283.000.
Mitchell, Peter W. D., to Union Camp Corporation. Dispensing fragrances. 4,454,987, Cl. 239-6.000.
Mitchell, Robert A. Apparatus for insulating windows and the like. 4,454,691, Cl. 52-202.000.
Mitra, Gautam; and Lundblad, John L., to Cutter Laboratories, Inc. Antihemophilic factor concentrate. 4,455,301, Cl. 424-101.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Morishita, Mitsuharu; Kobayashi, Hiroyuki; and Fukui, Toyoaki, 4,455,525, Cl. 322-28.000.
Nomura, Masami; and Ikejima, Hiroyuki, 4,454,930, Cl. 187-29.00R.
Nosaka, Eisho, 4,455,541, Cl. 335-210.000.
Ozaki, Hideyuki; Fujishima, Kazuyasu; and Shimotori, Kazuhiro, 4,455,628, Cl. 365-226.000.
Shibasaki, Kazunori, 4,455,099, Cl. 384-316.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Okazaki, Yoichiro; and Akazawa, Shigeaki, 4,454,644, Cl. 29-440.000.
Mitsubishi Rayon Co., Ltd.: *See*—
Handa, Ryoji; Hosoda, Jun; Ariyama, Kenzo; Okushima, Osamu; and Kurashige, Nobuo, 4,455,411, Cl. 526-208.000.
Ochi, Mitsutoshi; Kotera, Yoshinobu; and Sugiyama, Masaki, 4,455,347, Cl. 428-369.000.
Mitsui Engineering & Shipbuilding Co., Ltd.: *See*—
Nagata, Kenichi; Nagamori, Shigeru; Katoh, Yuuichi; Satoh, Katsumi; and Yano, Takashi, 4,455,148, Cl. 44-1.0SR.
Mitsui Kinzoku Kogyo K.K.: *See*—
Yamada, Shinjiro, 4,455,042, Cl. 292-201.000.
Mitsui Toatsu Chemicals, Incorporated: *See*—
Ishikawa, Koji; Ozawa, Hiroshi; Kobayashi, Nobuki; Kikuta, Yoshio; and Nakane, Kenichi, 4,455,360, Cl. 430-109.000.
Miura, Seishi: *See*—
Ikenoya, Yasuo; Hirano, Makoto; and Miura, Seishi, 4,454,714, Cl. 60-293.000.
Miwa, Tadashi; Kimura, Kiyoshi; Komiya, Yukiharu; and Tarumi, Noriyoshi, to Konishiroku Photo Industry Co., Ltd. Image reproducing apparatus. 4,455,079, Cl. 355-3.0TR.
Miyatuka, Hajime; and Kasuga, Akira, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,455,345, Cl. 428-332.000.
Miyazaki, Katuhiro: *See*—
Sasaki, Ken; Matsuyama, Sigeru; Yoshino, Tsunehiro; and Miyazaki, Katuhiro, 4,455,185, Cl. 156-250.000.
Miyazaki, Yoshiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Heat radiation control device. 4,454,910, Cl. 165-32.000.
Miyazi, Kazumi: *See*—
Saito, Shoichi; and Miyazi, Kazumi, 4,455,002, Cl. 242-199.000.
Mizuno, Junzi; Fukami, Akira; Okamoto, Kunio; and Ishii, Takeshi, to Nippon Soken, Inc.; and Nippondenso Co., Ltd. Canister for internal combustion engine. 4,454,849, Cl. 123-519.000.
Moates, Danny; and Chadwick, Michael L., to Celanese Corporation. Immiscible segmented distributor for random dyeing of textiles. 4,454,617, Cl. 8-151.000.
Mobil Oil Corporation: *See*—
Angevine, Philip J.; Carroll, Michael B.; Shih, Stuart S.; and Tabak, Samuel A., 4,455,216, Cl. 208-11.0LE.
Herd, Richard S.; and Landis, Phillip S., 4,455,242, Cl. 252-40.700.
Shu, Winston R., 4,454,916, Cl. 166-260.000.
Mochida, Haruo, to Nissan Motor Co., Ltd. Cylinder lock. 4,454,736, Cl. 70-422.000.
Mochida, Haruo; and Shimizu, Keiichi, to Nissan Motor Company, Limited; and Kokusan Kinzoku Kogyo Co., Ltd. Electronical unlocking method and system. 4,455,588, Cl. 361-172.000.
Moench, Jerry D.: *See*—
Morton, Bruce L.; and Moench, Jerry D., 4,455,493, Cl. 307-296.00R.
Mokhort, Nikolai A.: *See*—
Portnyagina, Vera A.; Karp, Valentina K.; Barkova, Irina S.; Trinus, Fedor P.; Mokhort, Nikolai A.; Fadeicheva, Alexandra G.; Kozhushko, Galina I.; Ryabukha, Tatyana K.; Panteleimonov, Alexandr G.; Kljushin, Viktor V.; Dobrovolsky, Jury N.; Kirichek, Larisa M.; Medvedovsky, Adolf A.; Getman, Galina A.; Usenko, Jury D.; Sidelnikov, Viktor M.; Danilevsky, Nikolai F.; and Solsky, Yakov P., 4,455,312, Cl. 424-251.000.
Moldex/Metric Products, Inc.: *See*—
Huber, Otto L.; and Magidson, Mark, 4,454,881, Cl. 128-206.150.
Mollard, Marc: *See*—
Bergault, Anne-Marie; Bonavent, Gerard, deceased; Jarrin, Jacques; and Mollard, Marc, 4,455,406, Cl. 525-194.000.
Moller, Richard W., to Hydreclaim Corporation. Auger housing construction. 4,454,943, Cl. 198-657.000.
Monnier, Peter L. Plaster splint or cast for medical purposes. 4,454,874, Cl. 128-91.00R.
Monsanto Co.: *See*—
Bollinger, Frederic G., 4,454,682, Cl. 47-57.600.
Moody, Roy A.: *See*—
Caveney, Jack E.; and Moody, Roy A., 4,454,651, Cl. 29-861.000.
Mooney, Paul C., to Quick-set, Incorporated. Locking tripod leg. 4,455,005, Cl. 248-188.800.
Moore, Fred W.: *See*—
Sitzler, Edward R.; and Moore, Fred W., 4,454,703, Cl. 52-788.000.
Moore & Sons, Inc.: *See*—
Luebke, Ralph C., 4,454,837, Cl. 119-12.000.
Moorehead, Eric L.: *See*—
Robinson, Paul R.; and Moorehead, Eric L., 4,455,388, Cl. 502-209.000.
Moraillon, Jean Y., to Thomson-CSF. Process for demodulating a frequency-modulated signal and demodulators using this process. 4,455,533, Cl. 329-126.000.
Morelli, Marco: *See*—
Murari, Bruno; Storti, Sandro; Morelli, Marco; and Bozotti, Carlo, 4,455,585, Cl. 361-18.000.
Morgan, Annis R., Jr.: *See*—
Bachmann, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., 4,454,670, Cl. 40-584.000.
Morgan, Howard H., Jr.: *See*—
Brownell, George L.; Collier, Melba; Hall, William E.; Morgan, Howard H., Jr.; and Snyder, Arthur R., 4,455,446, Cl. 585-350.000.
Morgenstern, Johannes, to Trans-Ad Corporation. Timetable display. 4,454,671, Cl. 40-607.000.
Morimoto, Kenji; and Ashina, Masato, to Toyo Seikan Kaisha, Ltd. Rotary light tester for continuously inspecting empty cans. 4,455,225, Cl. 209-588.000.
Morishita, Mitsuharu; Kobayashi, Hiroyuki; and Fukui, Toyoaki, to Mitsubishi Denki Kabushiki Kaisha. Control unit for generator driven by engine. 4,455,525, Cl. 322-28.000.
Moriuchi, Shigenori: *See*—
Urata, Yukihide; Kasama, Yasuo; Moriuchi, Shigenori; and Okutsu, Eiichi, 4,455,365, Cl. 430-309.000.
Moriya, Yoshiaki: *See*—
Suzuki, Seigo; Eguchi, Seiji; and Moriya, Yoshiaki, 4,455,608, Cl. 364-200.000.
Morrison, James D., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Oxygen accumulator for constant partial pressure semi-closed breathing apparatus. 4,454,878, Cl. 128-201.270.
Morrow, Jerry D.; and Andrews, Paul L., to Burns & McDonnell Engineering Company, Inc. Clarification of fluids. 4,455,239, Cl. 210-802.000.
Morton, Bruce L.; and Moench, Jerry D., to Motorola, Inc. Substrate bias pump. 4,455,493, Cl. 307-296.00R.
Moss, Arlon R. Bed warmer. 4,455,472, Cl. 219-217.000.
Motorola Inc.: *See*—
Burke, Timothy M., 4,455,664, Cl. 375-104.000.
Dolikian, Arman V., 4,455,617, Cl. 364-724.000.
Dworsky, Lawrence N.; Weisman, Douglas H.; and Ninh, Loi Q., 4,454,639, Cl. 29-25.350.
Gillig, Steven F., 4,455,534, Cl. 330-51.000.

Morton, Bruce L.; and Moench, Jerry D., 4,455,493, Cl. 307-296.00R.
Wurzburg, Henry, 4,455,539, Cl. 333-173.000.
Mount Sinai School of Medicine of the City University of New York: *See*—
Bekesi, Julius G.; Holland, James F.; and Tsang, Peter H., 4,455,379, Cl. 436-504.000.
MPD Technology Corporation: *See*—
Osborn, Donald H., 4,455,167, Cl. 75-255.000.
Mueller, Klaus: *See*—
Fink, Herbert; Kniese, Heiner; Suetterlin, Norbert; Mueller, Klaus; and Siol, Werner, 4,455,342, Cl. 428-265.000.
Mukaemachi, Takuji: *See*—
Mijioka, Yoshiaki; Yamamoto, Kouichi; Suzuki, Taihei; and Mukaemachi, Takuji, 4,455,645, Cl. 370-16.000.
Mukai, Hideo; and Takano, Toshimasa, to Tokyo Shibaura Denki Kabushiki Kaisha. Charging device having a conductive particle impregnated strand lined contact member. 4,455,078, Cl. 355-3.0CH.
Mulcahy, Joseph A., to Co-Steel International Limited. Mold stator for electromagnetic stirring. 4,454,909, Cl. 164-504.000.
Muller, Karl-Heinz: *See*—
Dworak, Wilhelm; Mayer, Siegfried; Muller, Karl-Heinz; Talmon, Wolfgang; and Wolff, Gunter, 4,455,130, Cl. 418-132.000.
Muller, Thomas P.; and Wirt, Leon A., to Caterpillar Tractor Co. Fluid control system. 4,454,715, Cl. 60-421.000.
Mundie, Craig J.: *See*—
Ahlstrom, John K.; Bachman, Brett; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr; and Well, Douglas M., 4,455,604, Cl. 364-200.000.
Murakami, Kenji; and Hayashi, Seiji, to Tokyo Shibaura Denki Kabushiki Kaisha. Resistive element formed in a semiconductor substrate. 4,455,547, Cl. 338-308.000.
Murakami, Manabu: *See*—
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Kazama, Ken; Muramoto, Ikuo; Kusunoki, Yoshinobu; Ozaki, Kenji; and Fujii, Hideyuki, 4,455,259, Cl. 260-397.250.
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Murata Manufacturing Co., Ltd.: *See*—
Nakatani, Hiroshi, 4,455,502, Cl. 310-368.000.
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Murray, Edward D.: *See*—
Maurice, Terrence J.; Murray, Edward D.; and Agnes, Jennifer M., 4,455,318, Cl. 426-104.000.
Musha, Tohru: *See*—
Kato, Kiichi; Ito, Kenichi; and Musha, Tohru, 4,455,085, Cl. 356-122.000.
Musits, Bela L.; and DeSantis, Frank A., to General Electric Company. Tool for picking up and inserting different length bolts. 4,455,044, Cl. 294-113.000.
Musschoot, Albert, to General Kinematics Corporation. Vibratory method for packing foundry sand into a pattern prior to the pouring of molten metal. 4,454,906, Cl. 164-34.000.
Musto, Richard L., to Combustion Engineering, Inc. Mill recirculation system. 4,454,825, Cl. 110-106.000.
Muto, Rudolph; and Cotner, Ronald. Nasal hood with open-bottom mixing chamber. 4,454,880, Cl. 128-205.250.
Myers, Charles D., Jr. Firewood log splitting attachment for tractors. 4,454,899, Cl. 144-193.00A.
Nagahara, Shusaku: *See*—
Takahashi, Kenji; Nagahara, Shusaku; Izumita, Morishi; Sato, Kazuhiro; Akiyama, Toshiyuki; and Ozawa, Naoki, 4,455,569, Cl. 358-51.000.
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Nagasawa, Masanori: *See*—
Suzuki, Yasuo; and Nagasawa, Masanori, 4,455,629, Cl. 365-230.000.
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Nakagawa, Sumio: *See*—
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Nakagawa, Yukio: *See*—
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Sasaki, Makoto; Takatsu, Haruyoshi; Sato, Hisato; Shimamura, Tuneo; Toriyama, Kazuhisa; and Nakagomi, Tamihito, 4,455,261, Cl. 260-465.00D.
Nakamura, Ikushi: *See*—
Tominaga, Shinji; and Nakamura, Ikushi, 4,455,073, Cl. 354-173.110.
Nakamura, Makoto: *See*—
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Nakamura, Sukenori: *See*—
Igarashi, Akira; and Nakamura, Sukenori, 4,455,346, Cl. 346-200.000.
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Shibata, Tomoyuki; and Nakayama, Mituhito, 4,454,993, Cl. 241-46.00B.
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Namecraft Manufacturing Corp.: *See*—
Liebman, Steve, 4,455,113, Cl. 409-84.000.
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Nara, Yasuaki: *See*—
Hibino, Yozo; Kamejima, Kohji; and Nara, Yasuaki, 4,454,726, Cl. 62-148.000.
Narayan, Thirumurti: *See*—
Reichel, Curtis J.; Narayan, Thirumurti; and Patton, John T., Jr., 4,455,397, Cl. 521-166.000.
Narusawa, Toshiaki; Okada, Seiji; Muramatsu, Kiyohide; Yagishita, Teruo; and Okuyama, Hirofumi, to Fujitsu Limited. Process for preparing developer materials for electrostatic images. 4,455,361, Cl. 430-137.000.
National Gypsum Company: *See*—
Johnson, Robert M., 4,455,271, Cl. 264-42.000.
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Szymanski, Chester D.; and Neigel, Dennis, 4,455,408, Cl. 525-291.000.
NCR Corporation: *See*—
Baker, George J., 4,455,596, Cl. 363-21.000.
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Fajt, John; and Neal, James V., Jr., 4,454,941, Cl. 198-389.000.
Neal, James W.; and Loersch, Joseph F., to United Technologies Corporation. Method for simultaneous peening and smoothing. 4,454,740, Cl. 72-53.000.
Near, Charles W.: *See*—
Watson, Robert E.; Walden, Jack M.; and Near, Charles W., 4,455,607, Cl. 364-200.000.
Neel, Jean: *See*—
Boutin, Jean; and Neel, Jean, 4,455,235, Cl. 210-701.000.
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Szymanski, Chester D.; and Neigel, Dennis, 4,455,408, Cl. 525-291.000.
Nell, David J.: *See*—
Marquess, Gerald E.; and Nell, David J., 4,455,282, Cl. 422-199.000.
Neti, Radhakrishna M.; and Sawa, Kenneth B., to Beckman Instruments, Inc. Pressure equalization system for membrane type amperometric sensors. 4,455,213, Cl. 204-415.000.
Neukermans, Armand P.: *See*—
Boyden, James H.; Bradbury, Donald R.; Garrettson, Garrett A.; Groves, Timothy R.; Hanlon, Lawrence R.; and Neukermans, Armand P., 4,455,561, Cl. 346-140.00R.
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Neuzil, Richard W.: *See*—
Kulprathipanja, Santi; and Neuzil, Richard W., 4,455,444, Cl. 585-826.000.
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Tweedle, Michael F., 4,455,291, Cl. 424-1.100.

New Way Packaging Machinery, Inc.: *See*—
Roth, William F.; and Snyder, Nevin, 4,455,182, Cl. 156-215.000.
Newsam, Leonard: *See*—
Massey, Raymond D.; and Newsam, Leonard, 4,455,477, Cl. 219-328.000.
Ney, Reuben E.: *See*—
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NGK Insulators, Ltd.: *See*—
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Niki, Motoharu: *See*—
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Dworsky, Lawrence N.; Weisman, Douglas H.; and Ninh, Loi Q., 4,454,639, Cl. 29-25.350.
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Satake, Takeo; Ishigami, Masahisa; Arimoto, Kunio; Matsuba, Yorishige; Inoue, Yoshikazu; Tanaka, Yusuke; and Kanda, Kohei, 4,455,149, Cl. 44-51.000.
Nippon Columbia Company, Ltd.: *See*—
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Nippon Electric Co., Ltd.: *See*—
Inamura, Kiyonari; Ueda, Yasuo; Furushima, Nobumasa; and Shigaki, Keisuke, 4,455,609, Cl. 364-414.000.
Kaneda, Hiroyuki, 4,455,676, Cl. 381-106.000.
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Amano, Takehisa, 4,454,797, Cl. 84-1.030.
Nippon Pillar Packing Co. Ltd.: *See*—
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Nippon Soken, Inc.: *See*—
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Isomura, Shigenori; Kondo, Toshio; Kodama, Katsuhiko; Kobayashi, Akio; and Sakakibara, Shuji, 4,454,847, Cl. 123-492.000.
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Nishioka, Gary M.; and Wesson, Sheldon P., to Owens-Corning Fiberglas Corporation. Method of increasing insulation resistance of glass fibers. 4,455,330, Cl. 427-379.000.
Nissan Motor Co., Ltd.: *See*—
Mochida, Haruo, 4,454,736, Cl. 70-422.000.
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Ogawa, Naoki, 4,454,842, Cl. 123-195.00R.
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Yoshida, Kenichi; Asano, Masaharu; and Yoneda, Kenji, 4,454,750, Cl. 73-35.000.
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Nitto Kagaku Kogyo Kabushiki Kaisha: *See*—
Handa, Ryoji; Hosoda, Jun; Ariyama, Kenzo; Okushima, Osamu; and Kurashige, Nobuo, 4,455,411, Cl. 526-208.000.
Niwa, Yukichi; Ohwada, Mitsutoshi; Ogino, Yasuo; Tanaka, Kazuo; and Koumura, Noboru, to Canon Kabushiki Kaisha. Optical device. 4,455,065, Cl. 350-445.000.
Nix, Richard; and Leigh-Monstevens, Keith V., to Automotive Products plc. Shipping and installation strap for linear actuator. 4,454,632, Cl. 24-16.0PB.
Niyama, Eisuke: *See*—
Kodama, Hideyo; Niyama, Eisuke; Endo, Munehiro; and Kimura, Tomoaki, 4,454,908, Cl. 164-454.000.
Noble, John W., to Westvaco Corporation. Adhesive latex polymerization surfactants. 4,455,263, Cl. 260-503.000.
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McDaniel, John M., and Noblitt, Niles L., 4,454,612, Cl. 3-1.913.
Noda, Kanji; Nakagawa, Akira; Yamagata, Tetsuya; Kobayasi, Masasi; Suenaga, Tadayoshi; Tokubuchi, Fumiaki; Noguchi, Kazuki; Yoshitake, Tadaaki; Tsuji, Masayoshi; and Ide, Hiroyuki, to Hisamitsu Pharmaceutical Co., Ltd. Novel plasters. 4,455,146, Cl. 604-897.000.
Noe, William J.: *See*—
Burkland, Charles W.; and Noe, William J., 4,454,732, Cl. 68-3.00R.
Noel, Daniel R. F.; and Florence, Alain F., to Goodyear Tire & Rubber Company, The. Multi-ply belt pneumatic tire. 4,454,903, Cl. 152-361.0DM.
Noguchi, Kazuki: *See*—
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Nomura, Masami; and Ikejima, Hiroyuki, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for controlling an AC power elevator. 4,454,930, Cl. 187-29.00R.
Norac Company, Inc., The: *See*—
Wylegala, Kenneth B.; Fischer, James R.; Long, Franklin A.; and Golob, Deborah L., 4,455,252, Cl. 252-186.260.
Norand Corporation: *See*—
Koenck, Steven E., 4,455,523, Cl. 320-43.000.
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North, Bernard F.: *See*—
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Norton, Don S.: *See*—
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Nosaka, Eisho, to Mitsubishi Denki Kabushiki Kaisha. Color cathode ray tube device. 4,455,541, Cl. 335-210.000.
Novak, Ronald W.: *See*—
Amick, David R.; Melamed, Sidney; and Novak, Ronald W., 4,455,402, Cl. 524-295.000.
Novation, Inc.: *See*—
Ragsdale, Robert G., 4,455,663, Cl. 375-98.000.
Novo Industri A/S: *See*—
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NTN Toyo Bearing Co., Ltd.: *See*—
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O.M. Scott & Sons Company, The: *See*—
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Obzansky, David M.: *See*—
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O'Cadiz Castaneda, Rene A., to O'Cadiz-Castaneda, Rene Alejandro. Construction process including slab sliding support and comprising simultaneous wall erection. 4,455,270, Cl. 264-33.000.
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Ochi, Kenji: *See*—
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Ochi, Mitsutoshi; Kotera, Yoshinobu; and Sugiyama, Masaki, to Mitsubishi Rayon Co., Ltd. Acryiic fibers having irregular-form section and process for producing the same. 4,455,347, Cl. 428-369.000.
Octanorm-Vertriebs-GmbH fur Bauelemente: *See*—
Hackenberg, Dieter, 4,455,103, Cl. 403-190.000.
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Ogawa, Iwakichi, to Takara Co., Ltd. Toy figure convertible into toy vehicle. 4,454,679, Cl. 446-290.000.
Ogawa, Masahiko, to Canon Kabushiki Kaisha. Compensating circuit for an infrared-ray signal detection device in an auto focus camera. 4,455,070, Cl. 354-403.000.
Ogawa, Naoki, to Nissan Motor Company, Ltd. Internal combustion engine with bearing beam structure. 4,454,842, Cl. 123-195.00R.
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O'Halloran, James, to Radius Corporation. Toothbrush. 4,454,623, Cl. 15-167.00R.
O'Hare, Louis R. Root augmentor for vertical horticulture. 4,454,684, Cl. 47-82.000.
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Ohno, Hirotoshi, to Victor Company of Japan, Limited. Control circuit for a brushless DC motor. 4,455,514, Cl. 318-254.000.

Ohwada, Mitsutoshi: *See*—
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Oizumi, Yoshio, to Yamakyu Automatics Co., Ltd. System for conveying conical articles. 4,454,942, Cl. 198-424.000.

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Olen, Kenneth R. Chemically enhanced combustion of water-slurry fuels. 4,455,150, Cl. 44-51.000.

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Bockstruck, Herman N., 4,454,674, Cl. 42-76.00R.
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Jacobsmeyer, Bernard J.; and Reding, Gary D., 4,454,947, Cl. 209-548.000.
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Olson, Daniel R.; and Webb, Karen K., to General Electric Company. UV Curable polysiloxane from colloidal silica, methacryloyl silane, diacrylate, resorcinol monobenzoate and photoinitiator. 4,455,205, Cl. 204-159.130.

Olson, Duane G., to Boson Table Company. Table for use in cleaning fish. 4,454,628, Cl. 17-44.000.

Olson, Roy H.; Petterson, Tor H.; and Roberts, William E., to Logicon, Inc. Transport for display terminal. 4,455,066, Cl. 353-26.00R.

Olympus Optical Co. Ltd.: *See*—
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Saito, Shoichi; and Miyazi, Kazumi, 4,455,002, Cl. 242-199.000.
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OMV Aktiengesellschaft: *See*—
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ONEAC Corporation: *See*—
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Optimizer, Ltd.: *See*—
Reinhard, George G.; Osgood, Gordon L., Sr.; and Kinde, Ronald A., Sr., 4,454,841, Cl. 123-3.000.

Orchard, Rolf O., to Puritan-Bennett Corp. Low-noise diaphragm for use in exhalation valve. 4,454,893, Cl. 137-494.000.

Orii, Masaru, to Kabushiki Kaisha Orii Jidoki Seisakusho. Turnover apparatus. 4,454,781, Cl. 74-99.00R.

Oritani, Atsushi, to Fujitsu Limited. Static type semiconductor memory device. 4,455,627, Cl. 365-226.000.

Osaki, Masaaki: *See*—
Banno, Kazuo; Fujioka, Takafumi; Osaki, Masaaki; and Nakagawa, Kazuyuki, 4,455,422, Cl. 544-363.000.

Osborn, Donald H., to MPD Technology Corporation. Nickel-zinc dust-iron-nickel powder pigment system. 4,455,167, Cl. 75-255.000.

Osgood, Gordon L., Sr.: *See*—
Reinhard, George G.; Osgood, Gordon L., Sr.; and Kinde, Ronald A., Sr., 4,454,841, Cl. 123-3.000.

Oshima, Shigeru: *See*—
Wong, Wan C.; and Oshima, Shigeru, 4,455,074, Cl. 354-173.100.

Oskar Dilo Maschinenfabrik KG.: *See*—
Dilo, Richard, 4,454,637, Cl. 28-110.000.

Ostertag, Werner: *See*—
Wienand, Henning; Ostertag, Werner; and Bittler, Knut, 4,455,174, Cl. 156-288.00B.

Ostrovlyanchik, Evgenia S.: *See*—
Sizyakov, Viktor M.; Kaluzhsky, Nikolai A.; Badaiants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Isakov, Evgeny A.; Alexandrova, Zarya N.; Afanasiev, Valentin N.; Chernov, Vinetsy I.; Zhukov, Alexandr G.; Kutsenko, Viktor S.; Vysotskaya, Galina M.; Ostrovlyanchik, Evgenia S.; Mironov, Evgeny I.; Vladimirov, Pavel S.; Alexeev, Alexei I.; Finkelshtein, Leonid I., deceased; Finkelshtein, Nina J., administrator; and Finkelshtein, Julia L., administrator, 4,455,284, Cl. 423-119.000.

Oswald, Norman D.; Franklin, Carl M.; Gutzler, Marc H.; and Mankey, Harry S., to Standard Manufacturing Company. Undercarriage for armored personnel carrier. 4,454,925, Cl. 180-22.000.

Otis Elevator Company: *See*—
Leiner, Robert L.; and Salmon, John K., 4,454,931, Cl. 187-52.0LC.

Otobe, Yutaka; and Kishi, Noriyuki, to Honda Motor Co., Ltd. Fuel supply control method and system for internal combustion engines equipped with exhaust gas recirculation control systems. 4,454,855, Cl. 123-571.000.

Otobe, Yutaka: *See*—
Gotoh, Osamu; and Otobe, Yutaka, 4,454,854, Cl. 123-571.000.

Otsuka Pharmaceutical Co., Ltd.: *See*—
Adachi, Masakazu, 4,455,380, Cl. 436-504.000.
Banno, Kazuo; Fujioka, Takafumi; Osaki, Masaaki; and Nakagawa, Kazuyuki, 4,455,422, Cl. 544-363.000.

Owen, Harrold D.: *See*—
Henry, Walter B.; McNeely, John F.; and Owen, Harrold D., 4,454,814, Cl. 102-200.000.

Owens-Corning Fiberglas Corporation: *See*—
Johnson, Carl A., 4,455,400, Cl. 523-454.000.
Nishioka, Gary M.; and Wesson, Sheldon P., 4,455,330, Cl. 427-379.000.

Owens-Illinois Inc.: *See*—
Jabarin, Saleh A.; and Kollen, Wendell J., 4,454,945, Cl. 206-524.300.
Kusz, Maximillian; and Filimore, William E., 4,454,955, Cl. 215-220.000.

Oxenrider, Bryce C.; and Price, Alson K., to Allied Corporation. Mixtures comprising hydrocarbon esters of benzene carboxylic acids and fluorocarbon esters of benzene carboxylic acids and fibers containing the same. 4,455,349, Cl. 428-395.000.

Oxman, Jack, to Johnston Environmental Corporation. Strip curtain for display cases. 4,454,904, Cl. 160-332.000.

Oyama, Akira, to Alps Electric Co., Ltd. Pulse switch. 4,455,458, Cl. 200-1.00B.

Ozaki, Hideyuki; Fujishima, Kazuyasu; and Shimotori, Kazuhiro, to Mitsubishi Denki Kabushiki Kaisha. Substrate bias generating circuit. 4,455,628, Cl. 365-226.000.

Ozaki, Kenji: *See*—
Kazama, Ken; Muramoto, Ikuo; Kusunoki, Yoshinobu; Ozaki, Kenji; and Fujii, Hideyuki, 4,455,259, Cl. 260-397.250.

Ozawa, Hiroshi: *See*—
Ishikawa, Koji; Ozawa, Hiroshi; Kobayashi, Nobuki; Kikuta, Yoshio; and Nakane, Kenichi, 4,455,360, Cl. 430-109.000.

Ozawa, Naoki: *See*—
Takahashi, Kenji; Nagahara, Shusaku; Izumita, Morishi; Sato, Kazuhiro; Akiyama, Toshiyuki; and Ozawa, Naoki, 4,455,569, Cl. 358-51.000.

Paisley, Robert J.: *See*—
Hillman, Arthur E.; and Paisley, Robert J., 4,455,180, Cl. 156-89.000.

Pako Corporation: *See*—
Shpits, Raisa; Lundstrom, Robert W.; and Sannel, Benjamin H., 4,455,077, Cl. 354-299.000.

Palley, Igor: *See*—
Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., 4,455,273, Cl. 264-184.000.

Palmer, William A. Self-contained, compact towable facility having maximized balanced water storage, drain water collection and waste water isolation systems. 4,454,613, Cl. 4-300.000.

Panduit Corp.: *See*—
Caveney, Jack E.; and Moody, Roy A., 4,454,651, Cl. 29-861.000.

Panelfold, Inc.: *See*—
Dixon, Guy E., 4,454,690, Cl. 52-126.300.

Panster, Peter; Kleinschmit, Peter; and Buder, Wolfgang, to Degussa Aktiengesellschaft. Polymeric tertiary and secondary amines with a silica-type backbone, processes for their preparation, and use. 4,455,415, Cl. 528-39.000.

Panteleimonov, Alexandr G.: *See*—
Portnyagina, Vera A.; Karp, Valentina K.; Barkova, Irina S.; Trinus, Fedor P.; Mokhort, Nikolai A.; Fadeicheva, Alexandra G.; Kozhushko, Galina I.; Ryabukha, Tatyana K.; Panteleimonov, Alexandr G.; Kljushin, Viktor V.; Dobrovolsky, Jury N.; Kirichek, Larisa M.; Medvedovsky, Adolf A.; Getman, Galina A.; Usenko, Jury D.; Sidelnikov, Viktor M.; Danilevsky, Nikolai F.; and Solsky, Yakov P., 4,455,312, Cl. 424-251.000.

Panzera, Carlino, to Johnson & Johnson Dental Products Company. Single-frit glass ceramic. 4,455,383, Cl. 501-6.000.

Parasekvakos, Theodoros G.; and Bushma, W. Thomas, to Metretek, Incorporated. Apparatus and method for remote sensor monitoring, metering and control. 4,455,453, Cl. 179-2.0AM.

Parker, Wesley A.; Dewitz, Thomas S.; Hinds, George P., Jr.; Gwyn, John E.; Bilgic, A. Haluk; and Hardesty, Donald E., to Shell Oil Company. Separation of fluid cracking catalyst particles from gaseous hydrocarbons. 4,455,220, Cl. 208-161.000.

Parrens, Pierre: *See*—
Jeuch, Pierre; and Parrens, Pierre, 4,455,193, Cl. 156-643.000.

Parshin, Nikolai I.: *See*—
Filippov, Vladimir I.; Parshin, Nikolai I.; Barabanov, Igor V.; Marmer, Eduard N.; Puzanov, Alexandr F.; Lobanov, Alexandr B.; Usaty, Jury P.; Gerasimov, Vladimir I.; Tikhonov, Arkady K.; and Turulin, Viktor N., 4,455,177, Cl. 148-155.000.

Patchell, Albert G.: *See*—
Lloyd, Ronald; and Patchell, Albert G., 4,455,337, Cl. 428-134.000.

Pater, Larry L.: *See*—
Shea, John W.; and Pater, Larry L., 4,454,798, Cl. 89-14.00B.

Patterson, Richard A., to Minnesota Mining & Manufacturing Company. Tamper indicating composite tape closure. 4,454,956, Cl. 220-214.000.

Patton, John T., Jr.: *See*—
Reichel, Curtis J.; Narayan, Thirumurti; and Patton, John T., Jr., 4,455,397, Cl. 521-166.000.

Patzold, Walter; Verburg, Werner; and von Rintelen, Harald, to Agfa-Gevaert Aktiengesellschaft. Tamper-proof document. 4,455,359, Cl. 430-10.000.

Paul Flum Ideas, Inc.: *See*—
Flum, Paul, 4,454,949, Cl. 211-49.00D.

Paul Revere Corporation, The: *See*—
Ronayne, Ronald J.; and Kluver, Leroy, 4,454,707, Cl. 56-341.000.

Paulus, Wilfried: *See*—
Ritter, Helmut; Paulus, Wilfried; Kuhle, Engelbert; and Genth, Hermann, 4,455,309, Cl. 424-250.000.

Pavnica, Anthony J. Router bracket. 4,454,898, Cl. 144-1.00F.

Pawlowski, James F.: *See*—
Villarreal, Salvador; Lenett, Stuart D.; Kobayashi, Herbert S.; and Pawlowski, James F., 4,455,680, Cl. 455-208.000.

Paxson Machine Company, The: *See*—
Buta, John R., 4,454,738, Cl. 72-21.000.

Pearson, Kenneth C., to Hartco Company. Spring fastener clip for wooden furniture rails. 4,454,636, Cl. 24-347.000.

Peck, Robert E.: *See*—
Meyer, Gene A.; and Peck, Robert E., 4,454,713, Cl. 60-39.281.

Pelley, Michael S.; Rohn, David R.; Komarek, Lawrence A.; and Grudowski, Raymond A., to Allen-Bradley Company. Programmable controller with multiple functions. 4,455,621, Cl. 364-900.000.

Pengo Industries, Inc.: *See*—
Henry, Walter B.; McNeely, John F.; and Owen, Harrold D., 4,454,814, Cl. 102-200.000.

Perkin-Elmer Corporation, The: *See*—
Klein, John F.; Bhansali, Chandra K.; Fox, Thomas J.; Smyth, Richard T.; and Zatorski, Raymond A., 4,455,470, Cl. 219-121.0PP.

Perq Systems Corporation: *See*—
Kriz, John S., 4,455,451, Cl. 178-18.000.

Person, Joel I. Composite floor system. 4,454,695, Cl. 52-334.000.

Peterson, Laurence I., to Rohm and Haas Company. Anesthetic delivery system. 4,454,879, Cl. 128-204.130.

Petrovich, Vojislav. Froth flotation method for recovering metal values with polyhydroxy fatty acids. 4,455,223, Cl. 209-167.000.

Petterson, Tor H.: *See*—
Olson, Roy H.; Petterson, Tor H.; and Roberts, William E., 4,455,066, Cl. 353-26.00R.

Pfizer Inc.: *See*—
Bindra, Jasjit S.; Eggler, James F.; Johnson, Michael R.; and Schaaf, Thomas K., 4,455,421, Cl. 548-252.000.

Phillips Petroleum Company: *See*—
Garvert, Robert M., 4,455,279, Cl. 422-62.000.
Stapp, Paul R., 4,455,254, Cl. 252-8.55D.
Stapp, Paul R., 4,455,255, Cl. 252-8.55D.
Swanson, Billy L., 4,455,241, Cl. 252-8.55R.

Pieper, Rudolf: *See*—
Klein, Heinrich; Pieper, Rudolf; and Weber, Eduard, 4,454,661, Cl. 34-57.00E.

Pier Francesco Talenti: *See*—
Giorgetti, Aldo, 4,455,475, Cl. 219-306.000.

Pieslak, George; and Fritchle, Elena C., to Raychem Corporation. Protecting metal substrates from corrosion. 4,455,204, Cl. 204-147.000.

Pilpel, Edward; and Meatto, Franklin, to Olin Corporation. Laminated ski reinforcement members. 4,455,037, Cl. 280-610.000.

Pilznienski, John F.: *See*—
Wood, William G.; and Pilznienski, John F., 4,455,251, Cl. 252-156.000.

Pindell, Robert G.: *See*—
Brunner, Paul J.; Christopher, Charles A.; and Pindell, Robert G., 4,454,772, Cl. 73-863.310.
Brunner, Paul J.; Christopher, Charles A.; and Pindell, Robert G., 4,454,773, Cl. 73-863.310.

Pinkus, Oscar; and Wilcock, Donald F., to Mechanical Technology Incorporated. Vee-shaped magnetic/centrifugal seal and method of operation. 4,455,026, Cl. 277-1.000.

Pin), Alwyn, to Imperial Chemical Industries Limited. Methanol production. 4,455,394, Cl. 518-704.000.

Pioneer Electronic Corporation: *See*—
Saeki, Yoshifumi; and Yashiro, Kenji, 4,455,570, Cl. 358-86.000.

Pirkle, Frederick L., to Ogontz Controls Company. Fuel gauge for locomotives. 4,454,759, Cl. 73-299.000.

Pischinger, Franz; and Kreuter, Peter, to Pischinger, Franz. Electromagnetically operating actuator. 4,455,543, Cl. 335-266.000.

Pitney Bowes Inc.: *See*—
Dolan, Donald T.; and Stalzer, Henry, 4,455,562, Cl. 346-154.000.
Irvine, Robert, 4,454,973, Cl. 225-100.000.

Plaignaud, Marcel R.: *See*—
Marteau, Raymond; and Plaignaud, Marcel R., 4,454,928, Cl. 182-36.000.

Plastech, Inc.: *See*—
Marquis, Robert P.; and Weileder, Peter, 4,454,734, Cl. 68-198.000.

Platts, Stanley A., to Unishear Mixers Limited. Mixing apparatus. 4,455,092, Cl. 366-305.000.

Poclain Hydraulics: *See*—
Cailliau, Gerard M.; and Mathieu, Jean-Pol, 4,454,802, Cl. 92-158.000.

Poe, R. L.; and Royer, D. J., to Conoco Inc. Combined process for preparing alumina and alpha-olefins. 4,455,289, Cl. 423-630.000.

Poehler, Oliver. Return biller envelope book. 4,454,980, Cl. 229-69.000.

Poehlmann, Paul W. Projectile magazine. 4,454,971, Cl. 224-196.000.

Poffenbarger, Gary L.: *See*—
Janssen, Harry R.; and Poffenbarger, Gary L., 4,455,219, Cl. 208-131.000.

Pohl, Christopher A.; Slingsby, Rosanne W.; Johnson, Edward L.; and Angers, Leilani, to Dionex Corporation. Method and apparatus for ion analysis and detection using reverse mode suppression. 4,455,233, Cl. 210-635.000.

Pokorny, Richard J., to Minnesota Mining and Manufacturing Company. Wire coating composition. 4,455,348, Cl. 428-377.000.

Poliniak, Eugene S.: *See*—
Datta, Pabitra; and Poliniak, Eugene S., 4,455,335, Cl. 428-64.000.

Pollok, Hans-Jurgen, to Siemens Aktiengesellschaft. Self-pumping thrust bearing for electric machines. 4,455,098, Cl. 384-307.000.

Poppendieck, Donna L. Fingernail polish brush. 4,454,622, Cl. 15-167.00B.

Porous Materials, Inc.: *See*—
Gupta, Krishna M., 4,455,012, Cl. 251-134.000.

Portec, Inc.: *See*—
Stoller, David A., Sr.; Culler, William B.; and Wiesner, Paul E., 4,454,823, Cl. 105-423.000.

Portnoy, Robert C.: *See*—
Gutierrez, Antonio; Brownawell, Darrel W.; Portnoy, Robert C.; and Brois, Stanley J., 4,455,429, Cl. 548-239.000.

Portnyagina, Vera A.; Karp, Valentina K.; Barkova, Irina S.; Trinus, Fedor P.; Mokhort, Nikolai A.; Fadeicheva, Alexandra G.; Kozhushko, Galina I.; Ryabukha, Tatyana K.; Panteleimonov, Alexandr G.; Kljushin, Viktor V.; Dobrovolsky, Jury N.; Kirichek, Larisa M.; Medvedovsky, Adolf A.; Getman, Galina A.; Usenko, Jury D.; Sidelnikov, Viktor M.; Danilevsky, Nikolai F.; and Solsky, Yakov P. 2-(o-Carboxyphenylamino)-6H-pyrimido(2,1-b)-quinazolone-6 and derivatives thereof, and application as antiphlogistics. 4,455,312, Cl. 424-251.000.

Poston, Robert S., to Carmel Energy, Inc. Thermal acidization and recovery process for recovering viscous petroleum. 4,454,917, Cl. 166-303.000.

Potthof, Erwin; and Kruger, Tilmann, to Diehl GmbH & Co. Electronic control circuit for the formation of a monostable switching behavior in a bistable relay. 4,455,587, Cl. 361-160.000.

Power Cutting Incorporated: *See*—
Kwech, Horst; and Stouky, R. Jon, 4,454,957, Cl. 220-323.000.

Powers, Kerns H., to RCA Corporation. Multiplier for multiplying n-bit number by quotient of an integer divided by an integer power of two. 4,455,611, Cl. 364-760.000.

PPG Industries, Inc.: *See*—
Temple, Chester S., 4,455,343, Cl. 428-285.000.

Pradier, Serge: *See*—
Graillat, Gerard; Pradier, Serge; and Salomon, Georges P. J., 4,454,663, Cl. 36-120.000.

Pratt, Clyde R.; and Carignan, Roger G., to Techmedica, Inc. Osteal medical staple. 4,454,875, Cl. 128-92.00B.

Prescolite, a Div. of U.S. Indus.: *See*—
Roszel, Lynn, 4,455,546, Cl. 338-179.000.

Preston, David K.: *See*—
Zudkevitch, David; Preston, David K.; and Belsky, Stephen E., 4,455,198, Cl. 203-19.000.

Prestwich, Glenn D., to Research Foundation of State University of New York. Attractant termiticidal compounds, compositions and methods of use therefor. 4,455,441, Cl. 568-843.000.

Previte, Peter L.: *See*—
Krupick, Walter J.; Previte, Peter L.; and Cimera, Richard F., 4,454,777, Cl. 74-5.460.

Prevorsek, Dusan C.: *See*—
Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., 4,455,273, Cl. 264-184.000.

Price, Alson K.: *See*—
Oxenrider, Bryce C.; and Price, Alson K., 4,455,349, Cl. 428-395.000.

Price, Raymond R., to Rochester Silo, Inc. Continuous-unloading silo. 4,454,693, Cl. 52-248.000.

Pridgen, Robert L., to Aluminum Company of America. Method of sampling a liquid in a container. 4,454,774, Cl. 73-863.810.

Priesnitz, Uwe: *See*—
Diehr, Hans-Joachim; and Priesnitz, Uwe, 4,455,428, Cl. 548-187.000.

Primack, Harold S.; Reedy, Dom E.; and Kin, Frederick R., to ARI Technologies, Inc. Method of stabilizing chelated polyvalent metal solutions. 4,455,287, Cl. 423-573.00R.

Prochazka, Svante, to General Electric Company. Silicon carbide sintered body. 4,455,385, Cl. 501-90.000.
Procter & Gamble Company, The: *See—*
Hong, Charles A.; and Brabbs, William J., 4,455,333, Cl. 426-94.000.
Prolabo: *See—*
Guillemin, Claude; Lissot, Jean; and Vasseur, Jean-Pierre, 4,454,749, Cl. 73-23.100.
Pryor, Dale H., to Oime, Inc. Hydrodynamic brake. 4,454,935, Cl. 188-296.000.
Pullukat, Thomas J.: *See—*
Lynch, Michael W.; and Pullukat, Thomas J., 4,455,386, Cl. 502-104.000.
Puritan-Bennett Corp.: *See—*
Orchard, Rolf O., 4,454,893, Cl. 137-494.000.
Purrer, Josef, to Klockner-Humboldt-Deutz AG Zweigniederlassung Fahr. Control element for agricultural machine. 4,454,785, Cl. 74-523.000.
Purro, Norina M. Method of creating image on light sensitive sheet. 4,455,369, Cl. 430-357.000.
Puzanov, Alexandr F.: *See—*
Filippov, Vladimir I.; Parshin, Nikolai I.; Barabanov, Igor V.; Marmer, Eduard N.; Puzanov, Alexandr F.; Lobanov, Alexandr B.; Usaty, Jury P.; Gerasimov, Vladimir I.; Tikhonov, Arkady K.; and Turulin, Viktor N., 4,455,177, Cl. 148-155.000.
Pyles, Harley G.: *See—*
Jamison, Will B.; and Pyles, Harley G., 4,454,922, Cl. 175-323.000.
Pyrotector, Inc.: *See—*
Johnson, Robert E., 4,455,553, Cl. 340-629.000.
Quick-set, Incorporated: *See—*
Mooney, Paul C., 4,455,005, Cl. 248-188.800.
Quick, William H.: *See—*
Strahan, Virgil H.; James, Kenneth A.; and Quick, William H., 4,455,267, Cl. 264-1.300.
Qureshi, Shahid U. H., to Codex Corporation. Dual processor digital modem apparatus. 4,455,661, Cl. 375-8.000.
R. J. Harvey Instrument Corp.: *See—*
Maines, Robert Q., 4,455,376, Cl. 436-63.000.
Racal Data Communications Inc.: *See—*
Kromer, Philip F., III, 4,455,665, Cl. 375-110.000.
Radius Corporation: *See—*
O'Halloran, James, 4,454,623, Cl. 15-167.00R.
Ragland, Frank R., Jr., to RCA Corporation. Color picture tube having improved temperature compensating support for a mask-frame assembly. 4,455,505, Cl. 313-404.000.
Ragsdale, Robert G., to Novation, Inc. Full duplex modems and synchronizing methods and apparatus therefor. 4,455,663, Cl. 375-98.000.
Ramig, Robert J., Jr., to Teletype Corporation. Print hammer mechanism. 4,454,809, Cl. 101-93.300.
Ramspeck, Wolfgang; and **Sittig, Wolfgang,** to Hoechst Aktiengesellschaft. Process for improving the gas separation in liquid/gas reactors. 4,455,156, Cl. 55-52.000.
Rapp, Robert A.: *See—*
Ray, Siba P.; and Rapp, Robert A., 4,455,211, Cl. 204-293.000.
Raschbichler, Hans-Georg, to Thyssen Industrie Aktiengesellschaft. Apparatus for damping oscillations of magnetic elevated tracks and vehicles floatingly suspended thereon. 4,454,820, Cl. 104-281.000.
Rasmussen, Robert, to Industrial Parts Depot. Fabricated hinge track shoe. 4,455,053, Cl. 305-53.000.
Ratsko, Istvan: *See—*
Ivony, Jozsef; Ratsko, Istvan; Karaszy, Gyorgy; and Madi, Jeno, 4,455,035, Cl. 280-432.000.
Rau, Carl. Method and apparatus for detecting magnetism by means of electron spin polarization measurements through dielectronic transition. 4,455,486. Cl. 250-306.000.
Rau, Jim L., to TRW Inc. Load sense hydrostatic vehicle steering system. 4,454,716, Cl. 60-422.000.
Rauch, Werner: *See—*
Hahn, Alfred; Boegl, Manfred; and Rauch, Werner, 4,455,672. Cl. 378-181.000.
Ray, Siba P.; and **Rapp, Robert A.,** to Aluminum Company of America. Composition suitable for inert electrode. 4,455,211, Cl. 204-293.000.
Raychem Corporation: *See—*
Martin, Charles L., 4,455,041, Cl. 285-369.000.
Pieslak, George; and Fritchle, Elena C., 4,455,204, Cl. 204-147.000.
Raymond Engineering Inc.: *See—*
Schilke, David C.; and Dringoli, Paul D., 4,455,001, Cl. 242-192.000.
Razouk, Reda, to Fairchild Camera and Instrument Corporation. Method of inducing flow or densification of phosphosilicate glass for integrated circuits. 4,455,325, Cl. 427-85.000.
RCA Corporation: *See—*
Datta, Pabitra; and Polinik, Eugene S., 4,455,335, Cl. 428-64.000.
Dieterich, Charles B., 4,455,635, Cl. 369-59.000.
Goodman, Alvin M.; and Martinelli, Ramon U., 4,455,565, Cl. 357-23.400.
Gorog, Istvan, 4,455,633, Cl. 369-53.000.
La Prade, James N.; and Wondowski, Raymond S., 4,455,537, Cl. 333-33.000.
Powers, Kerns H., 4,455,611, Cl. 364-760.000.
Ragland, Frank R., Jr., 4,455,505, Cl. 313-404.000.
Wilson, Robert M., 4,455,638, Cl. 369-126.000.
Reddy, Daniel J., to Henry Ford Hospital. Assessing arterial systems. 4,454,885, Cl. 128-707.000.
Reddy, Srinivasa S. N.: *See—*
Sintim-Damoa, Kwame; Reddy, Srinivasa S. N.; and McCormick, E. Scott, 4,455,202, Cl. 204-68.000.
Redicon Corporation: *See—*
Bulso, Joseph D., Jr.; and Doyle, Stephen D., 4,454,743. Cl. 72-349.000.
Reding, Gary D.: *See—*
Jacobsmeyer, Bernard J.; and Reding, Gary D., 4,454,947, Cl. 209-548.000.
Redstone, Michael J.: *See—*
Sanders, Roy; and Redstone, Michael J., 4,455,123, Cl. 416-134.00A.
Reed Lignin, Inc.: *See—*
Hoftiezer, Henry W.; Watts, Daniel J.; and Takahashi, Akio, 4,455,257, Cl. 260-124.00R.
Reedy, Dom E.: *See—*
Primack, Harold S.; Reedy, Dom E.; and Kin, Frederick R., 4,455,287, Cl. 423-573.00R.
Regenerative Environmental Equipment Co., Inc.: *See—*
Benedick, Edward H., 4,454,826, Cl. 110-211.000.
Reichel, Curtis J.; Narayan, Thirumurti; and Patton, John T., Jr., to BASF Wyandotte Corporation. Polyisocyanurate foams prepared from partially etherified methylolamines. 4,455,397, Cl. 521-166.000.
Reick, Georg; and **Zirps, Wilhelm,** to Robert Bosch GmbH. Control valve. 4,454,982, Cl. 236-92.00R.
Reid, John H. Method and apparatus for induced-flow circulation and pressurized aeration in a barrier oxidation ditch. 4,455,232, Cl. 210-628.000.
Reid, Margaret A.: *See—*
Jalan, Vinod; Reid, Margaret A.; and Charleston, Jo Ann, 4,454,649, Cl. 29-623.500.
Reinhard, George G.; Osgood, Gordon L., Sr.; and Kinde, Ronald A., Sr., to Optimizer, Ltd. Automatic liquid thermal pressure regulator and balancing system. 4,454,841, Cl. 123-3.000.
Reinhold, Immo; and Tromp, Wouter T., to Rheometron AG. Measured value recording device for magnetic-inductive flow meters. 4,454,766, Cl. 73-861.120.
Reliance Electric Company: *See—*
Day, Alvin L.; and Jordan, Howard E., 4,455,521, Cl. 318-798.000.
Remery, Michel: *See—*
Le Gars, Jacques; Losset, Martine; and Remery, Michel, 4,455,653, Cl. 371-20.000.
Rendel, Robert D., to Emerson Electric Co. Universal high/low voltage kit for junction wiring box. 4,455,449, Cl. 174-53.000.
Reotham Limited: *See—*
Filippi, Rodolfo, 4,455,231, Cl. 210-519.000.
Research Corporation: *See—*
Olexa, Stephanie A.; and Budzynski, Andrei Z., 4,455,290, Cl. 424-1.100.
Research Foundation of State University of New York: *See—*
Prestwich, Glenn D., 4,455,441, Cl. 568-843.000.
Resonant Technology Company: *See—*
Gurries, Raymond A.; and Stormon, Harry J., 4,454,666, Cl. 37-118.00R.
Rest, Heinz; and **Giese, Ralf,** to Ford Motor Company. Window guide and seal for lowerable vehicle window. 4,454,688, Cl. 49-502.000.
Reynolds, Bruce A., to Chevron Research Company. Retorting process. 4,455,217, Cl. 208-11.00R.
Rheometron AG: *See—*
Reinhold, Immo; and Tromp, Wouter T., 4,454,766, Cl. 73-861.120.
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Boutin, Jean; and Neel, Jean, 4,455,235, Cl. 210-701.000.
Richardson, Edwin A.; and Hinson, Richard A., to Shell Oil Company. Thermally stimulating mechanically-lifted well production. 4,454,918. Cl. 166-303.000.
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Richmond, Michael S.: *See—*
Ahlstrom, John K.; Bachman, Brett; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr; and Well, Douglas M., 4,455,604, Cl. 364-200.000.
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Ricoh Company, Ltd.: *See—*
Shimada, Masaru; and Fujii, Tadashi, 4,455,168, Cl. 106-22.000.
Rieben, Stuart L., to Westinghouse Electric Corp. Bolt stretch measurement device. 4,454,790, Cl. 81-57.380.
Riggs, Kenneth E.; and **Wojciechowski, Carl J.,** to United States of America, National Aeronautics and Space Administration. Diffuser/ejector system for a very high vacuum environment. 4,454,753, Cl. 73-117.100.
Riley, John G.: *See—*
Smith, Norman; and Riley, John G., 4,454,827, Cl. 110-234.000.
Riordan, William J.; and **Collins, Charles,** to Kidde, Inc. Fuel valve latch out system. 4,455,589, Cl. 361-190.000.
Ritter, Helmut; Paulus, Wilfried; Kuhle, Engelbert; and **Genth, Hermann,** to Bayer Aktiengesellschaft. Halomethyl-thioamino-benzamides, a process for their preparation and their use. 4,455,309, Cl. 424-250.000.
Rittler, Hermann L., to Corning Glass Works. Transparent glass-ceramics especially suitable for use as stove windows. 4,455,160, Cl. 65-30.130.

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Arnold, Winfried; and Vlemmings, Jan, 4,454,919, Cl. 172-1.000.
Dworak, Wilhelm; Mayer, Siegfried; Muller, Karl-Heinz; Talmon, Wolfgang; and Wolff, Gunter, 4,455,130, Cl. 418-132.000.
Heitmann, Jurgen, 4,455,584, Cl. 360-108.000.
Reick, Georg; and Zirps, Wilhelm, 4,454,982, Cl. 236-92.00R.
Schmidt, Lothar; Siebicke, Horst; and Ursel, Eckhard, 4,454,626, Cl. 15-250.160.
Wesemeyer, Jurgen; Haas, Lothar; and Haubner, Georg, 4,455,623, Cl. 364-900.000.

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Olson, Roy H.; Petterson, Tor H.; and Roberts, William E., 4,455,066, Cl. 353-26.00R.

Robertson, Harry J. Medical protein hydrolysate, process of making the same and processes of utilizing the protein hydrolysate to aid in healing traumatized areas. 4,455,302, Cl. 424-177.000.

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Hansen, Eric J.; Kettman, John R.; and Robertson, Stella M., 4,455,296, Cl. 424-87.000.

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McKinnie, Bonnie G.; and Robinson, Gene C., 4,455,387, Cl. 502-153.000.

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Robson, Charles H. Apparatus for collecting propolis from a bee colony. 4,454,616, Cl. 6-4.00R.

Rochester Silo, Inc.: *See*—
Price, Raymond R., 4,454,693, Cl. 52-248.000.

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McKiel, Frank A., Jr., 4,455,678, Cl. 455-115.000.
Strahan, Virgil H.; James, Kenneth A.; and Quick, William H., 4,455,267, Cl. 264-1.300.

Rodrian, James A. Self-contained estrous detection tag. 4,455,610, Cl. 364-415.000.

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Bonilla-Lugo, Juan; and Rodriguez-Molinary, Felix A., 4,454,702, Cl. 52-745.000.

Rogers, Lee S.: *See*—
Esteban, Daniel J.; Jones, Gardner D., Jr.; and Rogers, Lee S., 4,455,649, Cl. 370-80.000.

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Rohm GmbH: *See*—
Fink, Herbert; Kniese, Heiner; Suetterlin, Norbert; Mueller, Klaus; and Siol, Werner, 4,455,342, Cl. 428-265.000.
Liebler, Ralf, 4,455,403, Cl. 524-300.000.

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Amick, David R.; Melamed, Sidney; and Novak, Ronald W., 4,455,402, Cl. 524-295.000.
Peterson, Laurence I., 4,454,879, Cl. 128-204.130.
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Pelley, Michael S.; Rohn, David R.; Komarek, Lawrence A.; and Grudowski, Raymond A., 4,455,621, Cl. 364-900.000.

Rohr, Otto: *See*—
Durr, Dieter; Rohr, Otto; and Bohner, Beat, 4,455,437, Cl. 560-21.000.

Rokos, Hartmut, to Henning Berlin GmbH Chemie- und Pharmawerk. Composition for the treatment of colitis ulcerosa, enteritis regionalis crohn (morbus crohn), chronic nonspecific colitis and diverticulitis and the use of salicylazobenzoic acid for the preparation of such compositions. 4,455,305, Cl. 424-226.000.

Ronayne, Ronald J.; and Kluver, Leroy, to Paul Revere Corporation, The. Crop retainer unit for a baler. 4,454,707, Cl. 56-341.000.

Rorer, David L.; and James, John E., to Teledyne Industries, Inc. Housing assembly for aircraft batteries. 4,455,357, Cl. 429-179.000.

Rosen, Goran. Golf cart. 4,455,030, Cl. 280-47.190.

Rosenberg, Neil A., to Integral Data Systems, Inc. Sheet-feed tractor providing pin or friction feed. 4,454,975, Cl. 226-74.000.

Roszel, Lynn, to Prescolite, a Div. of U.S. Indus. Variable resistor and switch assembly having separate sliders. 4,455,546, Cl. 338-179.000.

Roth, William F.; and Snyder, Nevin, to New Way Packaging Machinery, Inc. Tapered article labelling machine modification assembly and label application method. 4,455,182, Cl. 156-215.000.

Rotter, Josef: *See*—
Lanicek, Josef; and Rotter, Josef, 4,454,811, Cl. 101-185.000.

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Goehler, Robert F.; Addleman, Jeffrey L.; and Rotz, Dana R., 4,454,780, Cl. 74-87.000.

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Vines, Harvey L.; Alvarez, Miguel R.; Rowles, Howard C.; and Woodward, Donald W., 4,455,158, Cl. 62-28.000.

Rowold, Karl-Joachim: *See*—
Koepper, Rudolf; and Rowold, Karl-Joachim, 4,454,800, Cl. 91-51.000.

Royer, D. J.: *See*—
Poe, R. L.; and Royer, D. J., 4,455,289, Cl. 423-630.000.

Ruhrchemie Aktiengesellschaft: *See*—
Bussemeier, Bernd; Frohning, Carl D.; Horn, Gerhardt; and Kluy, Werner, 4,455,395, Cl. 518-717.000.

Russell, Robert G. Motion apparatus. 4,455,094, Cl. 368-65.000.

Russell, Taft B., to Edison Control Corporation. Holder for releasably securing a ferrite core or the like to an electrical power line. 4,454,635, Cl. 24-462.000.

Ryabukha, Tatyana K.: *See*—
Portnyagina, Vera A.; Karp, Valentina K.; Barkova, Irina S.; Trinus, Fedor P.; Mokhort, Nikolai A.; Fadeicheva, Alexandra G.; Kozhushko, Galina I.; Ryabukha, Tatyana K.; Panteleimonov, Alexandr G.; Kljushin, Viktor V.; Dobrovolsky, Jury N.; Kirichek, Larisa M.; Medvedovsky, Adolf A.; Getman, Galina A.; Usenko, Jury D.; Sidelnikov, Viktor M.; Danilevsky, Nikolai F.; and Solsky, Yakov P., 4,455,312, Cl. 424-251.000.

Rydborn, Sten A. Indication device. 4,455,549, Cl. 340-517.000.

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Clements, Herbert A., 4,454,938, Cl. 192-67.00A.

S.T. Dupont: *See*—
Malamoud, Jean G., 4,455,101, Cl. 401-243.000.

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Emilsson, Fred S.; Severinsson, Lars M.; and Stenssoe, Bo G., 4,454,932, Cl. 188-59.000.

Sacher, Robert F., to Calmar, Inc. Adjustable stroke dispensing pump. 4,454,964, Cl. 222-43.000.

Saeki, Yoshifumi; and Yashiro, Kenji, to Pioneer Electronic Corporation. CATV System. 4,455,570, Cl. 358-86.000.

Sage, Leslie R.: *See*—
Topping, Douglas R. P.; Walton, David W.; and Sage, Leslie R., 4,455,673, Cl. 381-12.000.

Saiji, Mitsuhiro: *See*—
Tanimoto, Akira; and Saiji, Mitsuhiro, 4,455,615, Cl. 364-513.500.

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Brenholdt, Irving R., 4,454,991, Cl. 241-30.000.

Saito, Kenzo, to Sony Corporation. Endless type tape cassette. 4,454,976, Cl. 226-118.000.

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Sakaguchi, Yoshihito: *See*—
Imose, Masayuki; Seno, Takao; and Sakaguchi, Yoshihito, 4,455,136, Cl. 432-59.000.

Sakai, Yoshio: *See*—
Masuhara, Toshiaki; Minato, Osamu; Shimohigashi, Katsuhiro; Masuda, Hiroo; Sunami, Hideo; Sakai, Yoshio; Kamigaki, Yoshiaki; Takeda, Eiji; and Hagiwara, Yoshimune, 4,455,495, Cl. 307-44.000.

Sakakibara, Naoji; and Nomura, Isshi, to Aisin Seiki Kabushiki Kaisha. Safety control system for a turbocharged engine. 4,454,718, Cl. 60-600.000.

Sakakibara, Shuji: *See*—
Isomura, Shigenori; Kondo, Toshio; Kodama, Katsuhiko; Kobayashi, Akio; and Sakakibara, Shuji, 4,454,847, Cl. 123-492.000.

Sakamoto, Fumio; Ikeda, Shoji; and Tsukamoto, Goro, to Kanebo Ltd. Quinolinecarboxylic acid derivative, and antibacterial agent containing said compound as active ingredient. 4,455,310, Cl. 424-250.000.

Sakamoto, Moriyoshi: *See*—
Itoh, Takehiko; and Sakamoto, Moriyoshi, 4,455,479, Cl. 219-405.000.

Sakitani, Katsumi; Maekawa, Takashi; Fujimoto, Satoru; Tajima, Tetsuro; and Hiroyasu, Makoto, to Daikin Kogyo Co., Ltd. Multi-vane type compressor. 4,455,129, Cl. 418-82.000.

Sakurai, Junji, to Fujitsu Limited. Highly integrated semiconductor memory device. 4,455,566, Cl. 357-41.000.

Salmon, John K.: *See*—
Leiner, Robert L.; and Salmon, John K., 4,454,931, Cl. 187-52.0LC.

Salomon, Georges P. J.: *See*—
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Saloom, George. Dual purpose weapon for use by police officers. 4,455,023, Cl. 273-84.00R.

Salter, David; and Scott, David, to Laporte Industries Limited. Arrangement for the entrainment of particulate materials. 4,455,288, Cl. 423-612.000.

Sanders, Roy; and Redstone, Michael J., to Westland plc. Connecting element and helicopter rotor incorporating same. 4,455,123, Cl. 416-134.00A.

Sanderson, Scott A.; and Bruot, Eric F., to Kemtune, Inc. Fully shielded multiple core water conditioner. 4,455,229, Cl. 210-222.000.

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Deveney, Joseph E.; and Sanderson, Stephen N., 4,454,934, Cl. 188-171.000.

Sandoz Ltd.: *See*—
Kaul, Bansi L., 4,455,424, Cl. 544-218.000.

San Giovanni, Ronald D., to United States of America, Army. Seismic parameter measurement method and apparatus. 4,455,631, Cl. 367-136.000.

Sannel, Benjamin H.: *See*—
Shpits, Raisa; Lundstrom, Robert W.; and Sannel, Benjamin H., 4,455,077, Cl. 354-299.000.

Sano, Shoji, to Victor Company of Japan Limited. Amplitude-modulated signal receiver having a variable Q circuit. 4,455,674, Cl. 381-15.000.

Santen, Sven; and Johansson, Borje, to SKF Steel Engineering AB. Increasing blast temperature. 4,455,165, Cl. 75-10.00R.

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Nakayama, Toshio; and Kanai, Takeshi, 4,455,247, Cl. 252-67.000.

Sargent & Greenleaf, Inc.: *See*—
Greiner, Garry C.; and Shelley, Joe A., Jr., 4,455,552, Cl. 340-543.000.

Sarl Inotec: *See*—
Bourbonnaud, Marc; and Thelinge, Jean, 4,454,851, Cl. 123-557.000.

Sarser, David, to King Instrument Corporation. Tape winding guide and centering apparatus and method. 4,454,998, Cl. 242-68.100.

Sartor, Bruno; Jager, Werner; Ebinger, Horst; Luthardt, Gunther; and Bergmann, Walter, to Uranit GmbH; and Nuken GmbH. Method for metallizing carbon fiber reinforced plastic members. 4,455,207, Cl. 204-192.00E.

Sasa, Nobumasa, to Konishiroku Photo Industry Co., Ltd. Process for forming metallic image, composite material for the same. 4,455,364, Cl. 430-299.000.

Sasaki, Ken; Matsuyama, Sigeru; Yoshino, Tsunehiro; and Miyazaki, Katuhiro, to Hitachi, Ltd. Method of manufacturing liquid crystal display element. 4,455,185, Cl. 156-250.000.

Sasaki, Makoto; Takatsu, Haruyoshi; Sato, Hisato; Shimamura, Tuneo; Toriyama, Kazuhisa; and Nakagomi, Tamihito, to Dainippon Ink and Chemicals, Inc.; and Hitachi, Ltd. 4-N-Alkylbenzoyloxy-3'-fluoro-4'-cyanobenzenes. 4,455,261, Cl. 260-465.00D.

Satake, Takeo; Ishigami, Masahisa; Arimoto, Kunio; Matsuba, Yorishige; Inoue, Yoshikazu; Tanaka, Yusuke; and Kanda, Kohei, to Maruzen Oil Co., Ltd.; and Nippon Chemtec Consulting Inc. Process for the production of fuel compositions. 4,455,149, Cl. 44-51.000.

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Sasaki, Makoto; Takatsu, Haruyoshi; Sato, Hisato; Shimamura, Tuneo; Toriyama, Kazuhisa; and Nakagomi, Tamihito, 4,455,261, Cl. 260-465.00D.
Takatsu, Haruyoshi; and Sato, Hisato, 4,455,443, Cl. 570-129.000.

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Takahashi, Kenji; Nagahara, Shusaku; Izumita, Morishi; Sato, Kazuhiro; Akiyama, Toshiyuki; and Ozawa, Naoki, 4,455,569, Cl. 358-51.000.

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Shimizu, Kyoichi; Sato, Kiyoshi; and Takahaski, Tadashi, 4,455,571, Cl. 358-138.000.

Sato, Shiro: *See*—
Terai, Shiro; Sato, Shiro; Kato, Sakae; Imai, Masaya; Inumaru, Susumu; and Yoshida, Masahiro, 4,454,748, Cl. 73-19.000.

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Nagata, Kenichi; Nagamori, Shigeru; Katoh, Yuuichi; Satoh, Katsumi; and Yano, Takashi, 4,455,148, Cl. 44-1.0SR.

Satterthwaite, J. Glenn. Process and device for splicing metal shafts by arc welding and spliced shaft made by such process. 4,455,468, Cl. 219-58.000.

Savit, Carl H.; and Shopland, Robert C., to Western Geophysical Company of America. Sensitivity and capacitance adjustment method for piezoelectric accelerometers. 4,455,500, Cl. 310-312.000.

Sawa, Kenneth B.: *See*—
Neti, Radhakrishna M.; and Sawa, Kenneth B., 4,455,213, Cl. 204-415.000.

Scanlon, Gerald P.: *See*—
Scanlon, Thomas J.; and Scanlon, Gerald P., 4,455,519, Cl. 318-654.000.

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Scapa Fab, Inc.: *See*—
Glenister, Bryan J., 4,454,660, Cl. 34-41.000.

Schaaf, Thomas K.: *See*—
Bindra, Jasjit S.; Eggler, James F.; Johnson, Michael R.; and Schaaf, Thomas K., 4,455,421, Cl. 548-252.000.

Schafer, Gregory L.: *See*—
Schafer, Tony L.; Schafer, Stephen A.; Schafer, Gregory L.; and Swett, H. Darwin, 4,454,860, Cl. 126-110.00R.

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Schafer, Tony L.; Schafer, Stephen A.; Schafer, Gregory L.; and Swett, H. Darwin, to Schafer, Stephen A.; and Schafer, Gregory L. Fuel stoker and furnace. 4,454,860, Cl. 126-110.00R.

Scharf, Heino W., to Dempster Systems Inc. Opposed cylinder cable hoist mechanism. 4,455,118, Cl. 414-494.000.

Scharf, Karl-Gunter: *See*—
Budich, Wolfgang; Gasper, Bertram; Kurth, Josef; Scharf, Karl-Gunter; and Wissinger, Waldemar, 4,455,398, Cl. 523-220.000.

Schauer, Clarence E.: *See*—
Schauer, Jack E.; and Schauer, Clarence E., 4,454,683, Cl. 47-76.000.

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Schipper, Dennis J., to ACF Industries, Incorporated. High volume railway hopper car. 4,455,110, Cl. 406-39.000.

Schissler, Brian D., to O. S. Kelly Company, The. Multiple station drilling apparatus. 4,454,645, Cl. 29-563.000.

Schittenhelm, Rudolf: *See*—
Schwierz, Gunter; Schittenhelm, Rudolf; Schmitt, Gunter; and Tschunt, Edgar, 4,455,667, Cl. 378-4.000.

Schleimer, Stephen I.: *See*—
Ahlstrom, John K.; Bachman, Brett; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr; and Well, Douglas M., 4,455,604, Cl. 364-200.000.

Schlicker, Harold R., Jr. Replaceable blade for cable laying plow. 4,454,921, Cl. 172-699.000.

Schlitt, Leland G., to United States of America, Energy. Electron beam magnetic switch for a plurality of free electron lasers. 4,455,277, Cl. 376-103.000.

Schlumberger Technology Corporation: *See*—
Guidry, Shelby L.; and Jernigan, Kerry D., 4,454,913, Cl. 166-117.500.
Sinclair, Paul L., 4,455,529, Cl. 324-339.000.

Schmid, Karl; and Heinrichs, Bernhard, to Krupp-Koppers GmbH. Transport container for transporting hot particulate materials. 4,454,959, Cl. 220-400.000.

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Johne, Hans; Schmidt, Lothar; and Jentzsch, Arndt, 4,454,812, Cl. 101-212.000.

Schmidt, Sabine; Kleinschmit, Peter; Schwarz, Rudolf; and Domesle, Rainer, to Degussa Aktiengesellschaft. Heat insulation mixture. 4,455,246, Cl. 252-62.000.

Schmitt, Gunter: *See*—
Schwierz, Gunter; Schittenhelm, Rudolf; Schmitt, Gunter; and Tschunt, Edgar, 4,455,667, Cl. 378-4.000.

Schmodde, Hermann: *See*—
Goller, Ernst; Kazmaier, Gunther; and Schmodde, Hermann, 4,454,731, Cl. 66-149.00R.

Schneider, Joseph J.; and Kaucic, Robert A., to AMCA International Corporation. Process for improved manufacture of shells for tunnel tubes. 4,454,978, Cl. 228-151.000.

Schneider, Palle; and Branner-Jorgensen, Sven, to Novo Industri A/S. Stabilized rennet solution. 4,455,375, Cl. 435-188.000.

Schneider, Phillip M.: *See*—
Wallace, Donald G.; Schneider, Phillip M.; and Lundblad, John L., 4,455,300, Cl. 424-101.000.

Schneider, William C.: *See*—
Wolf, Fred G.; and Schneider, William C., 4,454,803, Cl. 99-329.0RT.

Schneiderman, Gary: *See*—
Downie, David E.; Schneiderman, Gary; Shulse, Eric D.; and Withers, Stanley J., 4,454,643, Cl. 29-270.000.

Schnell, Josef. Rotatable handhold for athletic equipment especially for barbells. 4,455,020, Cl. 272-123.000.

Schoenheimer, Marcus F.; Gaskell, Lionel A.; and Ackermann, Keith A., to Actrol Industries Pty. Ltd. Solar heater system and valve. 4,454,890, Cl. 137-62.000.

Schonhuber, Max-J. System for recording data relating to specific lots of materials, particularly to milk lots. 4,455,483, Cl. 235-375.000.

Schosek, William O., to Elephant Industries, Inc. Pipe and cable installers. 4,455,107, Cl. 405-184.000.

Schrank, Martin P.: *See*—
Ayyagari, Murthy S.; Schrank, Martin P.; and Coppola, Richard M., 4,455,506, Cl. 313-506.000.

Schreiber, Franz: *See*—
Aldinger, Fritz; Heinke, Harry; Schreiber, Franz; and Werdecker, Waltraud, 4,454,977, Cl. 228-131.000.

Schroder, Stephen J.: *See*—
Lifshin, Eric; Cargioli, Joseph D.; Schroder, Stephen J.; and Wong, Joe, 4,455,181, Cl. 156-150.000.

Schroder, William J.: *See*—
Warner, Charles E.; and Schroder, William J., 4,454,710, Cl. 57-354.000.

Schubert, John C.; and LeDuc, Edward C., to Standard Oil Company (Indiana). Method of extruding a polystyrene foam using both a physical blowing agent and water. 4,455,272, Cl. 264-53.000.

Schulte, Louis T.: *See*—
Walden, Jack M.; Eads, William D.; Cozzens, Ray J.; Bidwell, John L.; Jewett, Robert A.; Wilson, Martin S.; Griffin, Daniel J.; Kuseski, Robert E.; and Schulte, Louis T., 4,455,618, Cl. 364-900.000.

Schultz, Carl: *See*—
Barrett, James H., Jr.; and Schultz, Carl, 4,454,896, Cl. 141-209.000.

Schultz, Ralph H., to Sperry Corporation. Compensation for dimensional changes in a record medium. 4,455,583, Cl. 360-78.000.

Schultz, Timothy. Abrading machine. 4,454,806, Cl. 99-609.000.

Schuyler, David L., to Touch Activated Switch Arrays, Inc. Touch activated controller for generating X-Y output information. 4,455,452, Cl. 178-18.000.

Schwab, Manfred F., to Alfred Honsel Nieten- und Metallwarenfabrik GmbH & Co. Blind riveting device with rivet pin conveying means. 4,454,746, Cl. 72-391.000.

Schwartz, David M. Solar fermentation and distillation process. 4,455,374, Cl. 435-161.000.

Schwartz, Robert C., to Horn and Gladden Lint Cleaner Co., Inc. Improved safety bar cutoff and brake method. 4,454,631, Cl. 19-0.200.

Schwarz, Rudolf: *See*—
Schmidt, Sabine; Kleinschmit, Peter; Schwarz, Rudolf; and Domesle, Rainer, 4,455,246, Cl. 252-62.000.

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Schweitz, Donald: *See*—
de Graff, Peter; and Schweitz, Donald, 4,455,034, Cl. 280-415.00R.
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Schwentker, Edwards P., to Ace Medical Company. Halo jig. 4,454,870, Cl. 128-75.000.
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Schwob, Pierre, to SEB S.A. Heat dissipator for the electronic circuit of a laundry iron. 4,455,473, Cl. 219-245.000.
Scordato, Richard E., to Medical Laboratory Automation, Inc. Test circuit for use in coagulation instrument. 4,454,752, Cl. 73-64.100.
Scott, David: *See*—
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Scott, Marshall H.: *See*—
Bhaskar, Kasi S.; Carlson, Alden J.; Couper, Alastair N.; Lambert, Dennis L.; and Scott, Marshall H., 4,455,654, Cl. 371-20.000.
Scully, Richard L.: *See*—
Bloodworth, William T., 4,455,646, Cl. 370-66.000.
Se-Kure Controls, Inc.: *See*—
Leyden, Roger J., 4,455,464, Cl. 200-61.930.
Seader, Leonard D., to Advanced Technology Laboratories, Inc. Wide dynamic range ultrasound echo receiver. 4,454,884, Cl. 128-660.000.
Seal, David B.: *See*—
Windeler, Christopher L.; DeVore, Henry S.; Seal, David B.; and Budzyn, Boleslaw L., 4,454,996, Cl. 242-25.00R.
Sears Manufacturing Co., Inc.: *See*—
Foster, Danny S.; and Burns, Daniel L., 4,455,009, Cl. 248-561.000.
SEB S.A.: *See*—
Schwob, Pierre, 4,455,473, Cl. 219-245.000.
Sedat, Georges, to Etat Francais represente par le Delegue General pour l'Armement. Castable smoke generating pyrotechnic composition and process for its preparation. 4,455,178, Cl. 149-19.600.
Seebinger, Frederick L., to Atlas Sound Division of American Trading and Production Corp. Reentrant cone driven loudspeaker. 4,454,927, Cl. 181-152.000.
Seiffert, Ulrich: *See*—
Kaspar, Lothar; and Seiffert, Ulrich, 4,454,789, Cl. 74-850.000.
Seiko Instruments & Electronics Ltd.: *See*—
Hoshi, Hideo, 4,455,576, Cl. 358-230.000.
Sema, Toru: *See*—
Tsutsui, Tatsuhiko; Sema, Toru; and Unezawa, Tsuneo, 4,455,636, Cl. 369-72.000.
Sena, Gil A. Automatic plant setting apparatus. 4,454,829, Cl. 111-2.000.
Seno, Takao: *See*—
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Seoka, Yoshio; and Aoki, Kozo, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,455,367, Cl. 430-505.000.
Settineri, William J.; Charles, John G.; Hinkel, Jerald J.; and Malone, Bradley P., to Dow Chemical Company, The. Method for removing or retarding paraffin buildup on surfaces in contact with crude oil. 4,455,175, Cl. 134-5.000.
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Emilsson, Fred S.; Severinsson, Lars M.; and Stensson, Bo G., 4,454,932, Cl. 188-59.000.
Seward, William E., III. Lockable adjustable wrench. 4,454,791, Cl. 81-133.000.
Seybold, Frederick W. Rotary internal combustion engine with uniformly rotating pistons cooperating with reaction elements having a varying speed of rotation and oscillating motion. 4,455,128, Cl. 418-34.000.
SGS-ATES Componenti Elettronici S.p.A.: *See*—
Murari, Bruno; Storti, Sandro; Morelli, Marco; and Bozotti, Carlo, 4,455,585, Cl. 361-18.000.
Shaltis, Jerold R., to Evans Products Company. Auxiliary circulation system for vehicle heaters. 4,454,984, Cl. 237-2.00A.
Sharp, Harper E.; Spiegel, Leo; Masters, Richard M.; Howatt, John R.; and Walker, Gary E., to Wilson Industries, Inc. Inertial borehole survey system. 4,454,756, Cl. 73-151.000.
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Inoue, Tomohiro; and Tanimoto, Akira, 4,454,796, Cl. 84-1.030.
Suzuki, Hiroyuki; Taoka, Masayuki; and Watanabe, Kiyoshi, 4,455,637, Cl. 369-77.100.
Tabuchi, Toshiaki; and Shimazawa, Yoichi, 4,455,127, Cl. 417-418.000.
Tanimoto, Akira; and Saiji, Mitsuhiro, 4,455,615, Cl. 364-513.500.
Shawcross, Alfred L.: *See*—
Martino, Ronald J.; and Shawcross, Alfred L., 4,455,593, Cl. 362-97.000.
Shea, John W.; and Pater, Larry L., to United States of America, Navy. Foam filled muzzle blast reducing device. 4,454,798, Cl. 89-14.00B.
Shea, Raymond E.: *See*—
Grenier, Wilfred J., 4,454,861, Cl. 126-247.000.
Shell Oil Company: *See*—
Broekhuis, Antonius A., 4,455,447, Cl. 585-853.000.
Lewis, Robert M.; and Slaugh, Lynn H., 4,455,389, Cl. 502-232.000.
Parker, Wesley A.; Dewitz, Thomas S.; Hinds, George P., Jr.; Gwyn, John E.; Bilgic, A. Haluk; and Hardesty, Donald E., 4,455,220, Cl. 208-161.000.
Richardson, Edwin A.; and Hinson, Richard A., 4,454,918, Cl. 166-303.000.
Wood, Donald L., 4,455,248, Cl. 252-75.000.
Shelley, Joe A., Jr.: *See*—
Greiner, Garry C.; and Shelley, Joe A., Jr., 4,455,552, Cl. 340-543.000.
Shelly, Randolph D. W., to Sperry Corporation. High frequency output inductor for inverter power supply. 4,455,545, Cl. 336-200.000.
Shepard, Steve A.: *See*—
Haag, George A.; Fogg, O. Douglas; Greenley, Gordon A.; Shepard, Steve A.; and Terry, F. Duncan, 4,455,624, Cl. 364-900.000.
Sheridan, John J. Dental brace bracket bonding and debracketing tool and method of use. 4,455,138, Cl. 433-3.000.
Sherwood Medical Company: *See*—
Joslin, Joel A., 4,455,140, Cl. 604-317.000.
Shibahara, Hiroshi: *See*—
Tomishima, Yoshio; Kobayashi, Teiji; Shibahara, Hiroshi; and Nojima, Yasuhiro, 4,455,413, Cl. 526-344.200.
Shibasaki, Kazunori, to Mitsubishi Denki Kabushiki Kaisha. Bearing lubricating system for electric rotary machine. 4,455,099, Cl. 384-316.000.
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Fujisawa, Kyuichi; and Shibata, Mineo, 4,455,559, Cl. 346-139.00R.
Shibata, Tomoyuki; and Nakayama, Mituhito, to Ebara Corporation. Grinder pump. 4,454,993, Cl. 241-46.00B.
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Inamura, Kiyonari; Ueda, Yasuo; Furushima, Nobumasa; and Shigaki, Keisuke, 4,455,609, Cl. 364-414.000.
Shih, Stuart S.: *See*—
Angevine, Philip J.; Carroll, Michael B.; Shih, Stuart S.; and Tabak, Samuel A., 4,455,216, Cl. 208-11.0LE.
Shillington, Richard A.; and Oberschmidt, Alec. One way sharps receptacle. 4,454,944, Cl. 206-366.000.
Shimada, Masaru; and Fujii, Tadashi, to Ricoh Company, Ltd. Aqueous ink for ink-jet printing. 4,455,168, Cl. 106-22.000.
Shimadzu Corporation: *See*—
Ichikawa, Tetsuo; Akiyama, Osamu; Hira, Rikuo; and Nishimura, Takashi, 4,455,097, Cl. 356-323.000.
Koike, Masato, 4,455,088, Cl. 356-334.000.
Shimamura, Tuneo: *See*—
Sasaki, Makoto; Takatsu, Haruyoshi; Sato, Hisato; Shimamura, Tuneo; Toriyama, Kazuhisa; and Nakagomi, Tamihito, 4,455,261, Cl. 260-465.00D.
Shimano Industrial Company Limited: *See*—
Shimano, Keizo, 4,454,784, Cl. 74-475.000.
Shimano, Keizo, to Shimano Industrial Company Limited. Speed changing device. 4,454,784, Cl. 74-475.000.
Shimazawa, Yoichi: *See*—
Tabuchi, Toshiaki; and Shimazawa, Yoichi, 4,455,127, Cl. 417-418.000.
Shimazoe, Michitaka; and Matsuoka, Yoshitaka, to Hitachi, Ltd. Load cell. 4,454,771, Cl. 73-862.680.
Shimizu, Katsuichi: *See*—
Yoshimura, Shigeru; and Shimizu, Katsuichi, 4,455,081, Cl. 355-14.0SH.
Shimizu, Keiichi: *See*—
Mochida, Haruo; and Shimizu, Keiichi, 4,455,588, Cl. 361-172.000.
Shimizu, Kyoichi; Sato, Kiyoshi; and Takahaski, Tadashi, to Victor Company of Japan, Ltd. Compression system and compression and expansion system for a composite video signal. 4,455,571, Cl. 358-138.000.
Shimohigashi, Katsuhiro: *See*—
Masuhara, Toshiaki; Minato, Osamu; Shimohigashi, Katsuhiro; Masuda, Hiroo; Sunami, Hideo; Sakai, Yoshio; Kamigaki, Yoshiaki; Takeda, Eiji; and Hagiwara, Yoshimune, 4,455,495, Cl. 307-44.000.
Shimotori, Kazuhiro: *See*—
Ozaki, Hideyuki; Fujishima, Kazuyasu; and Shimotori, Kazuhiro, 4,455,628, Cl. 365-226.000.
Shinkai, Kazuteru; Kohno, Masaru; Nakagawa, Yukio; Tamaoki, Norimasa; and Saito, Kiyoshi, to Fuji Electric Co., Ltd. Ultrasonic metering device. 4,454,767, Cl. 73-861.180.
Shinn, Terry L., to Smith International, Inc. High-pressure wellhead seal. 4,455,040, Cl. 285-142.000.
Shinohara, Toshio; and Usikubo, Masao, to Olympus Optical Co. Ltd. Apparatus for preserving liquid in automatic analyzer. 4,455,280, Cl. 422-63.000.
Shinozaki, Takashi; and Suzuki, Masatoshi, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust apparatus in vehicle. 4,454,719, Cl. 60-605.000.
Shiomi, Tomikazu: *See*—
Ogino, Kohzo; Shiomi, Tomikazu; Tanaka, Yuichi; and Yamashita, Seichi, 4,455,334, Cl. 428-36.000.
Shiota, Philip, to American Microsystems, Inc. Insulation process for integrated circuits. 4,455,568, Cl. 357-54.000.
Shirahata, Ryuji: *See*—
Akashi, Goro; and Shirahata, Ryuji, 4,454,836, Cl. 118-718.000.
Shoemaker, William E., to Gould Inc. Technique of reconstructing and displaying an analog waveform from a small number of magnitude samples. 4,455,613, Cl. 364-487.000.
Shopland, Robert C.: *See*—
Savit, Carl H.; and Shopland, Robert C., 4,455,500, Cl. 310-312.000.
Shouldis, Charles E. Fish cleaning device. 4,454,630, Cl. 17-70.000.
Showa Denko Kabushiki Kaisha: *See*—
Kojima, Kazuhiro; Ito, Haruaki; and Kubo, Hiroshi, 4,455,315, Cl. 424-274.000.
Shpits, Raisa; Lundstrom, Robert W.; and Sannel, Benjamin H., to Pako Corporation. Processor and method for processing photographic film discs. 4,455,077, Cl. 354-299.000.

Shtrikman, Shmuel, to Yeda Research and Development Co., Ltd. Linear motion devices. 4,455,497, Cl. 310-30.000.
Shu, Winston R., to Mobil Oil Corporation. In-situ combustion method for recovery of oil and combustible gas. 4,454,916, Cl. 166-260.000.
Shulse, Eric D.: *See*—
Downie, David E.; Schneiderman, Gary; Shulse, Eric D.; and Withers, Stanley J., 4,454,643, Cl. 29-270.000.
Sibille, Rene ; and Gaudry, Pierre, to LCC.CICE-Compagnie Europeene de Composants Electroniques. Magnetic circuit and induction device including the same. 4,455,544, Cl. 336-65.000.
Sidelnikov, Viktor M.: *See*—
Portnyagina, Vera A.; Karp, Valentina K.; Barkova, Irina S.; Trinus, Fedor P.; Mokhort, Nikolai A.; Fadeicheva, Alexandra G.; Kozhushko, Galina I.; Ryabukha, Tatyana K.; Panteleimonov, Alexandr G.; Kljushin, Viktor V.; Dobrovolsky, Jury N.; Kirichek, Larisa M.; Medvedovsky, Adolf A.; Getman, Galina A.; Usenko, Jury D.; Sidelnikov, Viktor M.; Danilevsky, Nikolai F.; and Solsky, Yakov P., 4,455,312, Cl. 424-251.000.
Sidman, Kenneth R.: *See*—
Tschirch, Richard P.; Sidman, Kenneth R.; and Arons, Irving J., 4,454,611, Cl. 2-161.00R.
Siebicke, Horst: *See*—
Schmidt, Lothar; Siebicke, Horst; and Ursel, Eckhard, 4,454,626, Cl. 15-250.160.
Siegrist, Max: *See*—
Meyer, Hans R.; and Siegrist, Max, 4,455,436, Cl. 549-467.000.
Siemens Aktiengesellschaft: *See*—
Aichinger, Horst; and Kranberg, Heinz E., 4,455,669, Cl. 378-97.000.
Binz, Reiner; Knorpp, Eberhard; and von Sichart, Frithjof, 4,455,648, Cl. 370-66.000.
Birkle, Siegfried; Stoger, Klaus; and De Vries, Hans, 4,455,201, Cl. 204-58.000.
Conrad, Bernhard; Finkenzeller, Johann; Kuehn, Gerhard; and Lichtenberg, Wolfhart, 4,455,488, Cl. 250-385.000.
Hahn, Alfred; Boegl, Manfred; and Rauch, Werner, 4,455,672, Cl. 378-181.000.
Kinzler, Hans, 4,455,538, Cl. 333-167.000.
Pollok, Hans-Jurgen, 4,455,098, Cl. 384-307.000.
Schwierz, Gunter; Schittenhelm, Rudolf; Schmitt, Gunter; and Tschunt, Edgar, 4,455,667, Cl. 378-4.000.
Vukasovic, Lovro, 4,455,597, Cl. 363-68.000.
Walker, Heinz, 4,455,528, Cl. 324-327.000.
Warden, Hans, 4,455,668, Cl. 378-021.000.
Siemens Corporation: *See*—
Gueldner, Enrique, 4,455,647, Cl. 370-62.000.
Sierk, Randall L.; and Freitag, Lonny R., to Sperry Corporation. Diesel engine control linkage. 4,454,783, Cl. 74-471.00R.
Sikorski, James T.: *See*—
Maltby, Robert E., Jr.; and Sikorski, James T., 4,454,972, Cl. 225-96.500.
Silver, Bernard R., to U.S. Industries, Inc. Upper jaw and tool assembly for fastener attaching machine. 4,454,650, Cl. 29-818.000.
Simm, Hans-Peter; Guhne, Wieland; Hoesch, Christoph; and Friedrichs, Renate, to Vorwerk & Co. Interholding GmbH. Device for cleaning textile surfaces. 4,454,627, Cl. 15-377.000.
Simmons, Robert N. X-Ray and photographic viewer. 4,454,669, Cl. 40-361.000.
Simms, Kenneth W.: *See*—
Engel, Joseph C.; Hanson, Richard E.; Simms, Kenneth W.; and Spreadbury, Robert J., 4,455,595, Cl. 362-265.000.
Simon, John M.: *See*—
Markham, David; Brown, Clifford G.; and Simon, John M., 4,455,234, Cl. 210-638.000.
Simpson, Howard D.: *See*—
Ting, Pauline B.; and Simpson, Howard D., 4,455,390, Cl. 502-314.000.
Sinclair, Alexander S.: *See*—
Eccleston, Barry C.; Sinclair, Alexander S.; and Elliot, Michael, 4,454,818, Cl. 104-98.000.
Sinclair, Paul L., to Schlumberger Technology Corporation. Digital induction logging tool including means for measuring phase quadrature components in a phase sensitive detector. 4,455,529, Cl. 324-339.000.
Singer Company, The: *See*—
Koper, James G.; and Ljung, Bo H. G., 4,455,060, Cl. 339-252.00S.
Krupick, Walter J.; Previte, Peter L.; and Cimera, Richard F., 4,454,777, Cl. 74-5.460.
Singer, Leonard S., to Union Carbide Corporation. Magnetic resonance apparatus. 4,455,527, Cl. 324-316.000.
Singh, Shobha: *See*—
Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; Zuber, John R.; and Zydzik, George J., 4,455,351, Cl. 428-450.000.
Sintim-Damoa, Kwame; Reddy, Srinivasa S. N.; and McCormick, E. Scott, to Standard Oil Company (Indiana). Electrolytic production of lithium metal. 4,455,202, Cl. 204-68.000.
Siol, Werner: *See*—
Fink, Herbert; Knese, Heiner; Suetterlin, Norbert; Mueller, Klaus; and Siol, Werner, 4,455,342, Cl. 428-265.000.
Sira Institute Limited: *See*—
West, Robert N.; and Barker, Andrew J., 4,455,086, Cl. 356-237.000.
Sittig, Wolfgang: *See*—
Ramspeck, Wolfgang; and Sittig, Wolfgang, 4,455,156, Cl. 55-52.000.
Sitzler, Edward R.; and Moore, Fred W., to Solar Structures Corp. Solar panel. 4,454,703, Cl. 52-788.000.
Sizyakov, Viktor M.; Kaluzhsky, Nikolai A.; Badaiants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Isakov, Evgeny A.; Alexandrova, Zarya N.; Afanasiev, Valentin N.; Chernov, Vinetsy I.; Zhukov, Alexandr G.; Kutsenko, Viktor S.; Vysotskaya, Galina M.; Ostrovlyanchik, Evgenia S.; Mironov, Evgeny I.; Vladimirov, Pavel S.; Alexeev, Alexei I.; Finkelshtein, Leonid I., deceased; Finkelshtein, Nina J., administrator; and Finkelshtein, Julia L., administrator, to Vsesojuzny Nauchnoissledovatelsky I Proektny Institut Aljuminievoi, Magnievoi I Elektrodnoi Promyshlennosti. Process for desilication of aluminate solution. 4,455,284, Cl. 423-119.000.
Skeen, Michael A.: *See*—
Weinstein, Albert; Skeen, Michael A.; and Connell, John L., 4,454,757, Cl. 73-189.000.
SKF Industrial Trading & Development Company, B.V.: *See*—
van Nederveen, Hans B.; and Verburgh, Martin B., 4,455,278, Cl. 419-6.000.
SKF Steel Engineering AB: *See*—
Santen, Sven; and Johansson, Borje, 4,455,165, Cl. 75-10.00R.
Slaugh, Lynn H.: *See*—
Lewis, Robert M.; and Slaugh, Lynn H., 4,455,389, Cl. 502-232.000.
Slingsby, Rosanne W.: *See*—
Pohl, Christopher A.; Slingsby, Rosanne W.; Johnson, Edward L.; and Angers, Leilani, 4,455,233, Cl. 210-635.000.
Sliski, Alan P., to Dennesen Electrostatics, Inc. Linear tracking system. 4,455,641, Cl. 369-249.000.
Sluijterman, Albertus A. S.; and Vink, Nicolaas G., to U.S. Philips Corporation. Device for displaying television pictures including a deflection unit therefor. 4,455,542, Cl. 335-213.000.
Small, Alan H.: *See*—
Webb, Paul A., Jr.; Small, Alan H.; and Ball, Dean M., 4,455,084, Cl. 356-72.000.
Smith, Craig A.: *See*—
Kasper, James J.; Bosch, George E.; and Smith, Craig A., 4,455,659, Cl. 373-39.000.
Smith, Earl D., to Dallas Smith Engineering Corp. Trailer apparatus. 4,455,119, Cl. 414-537.000.
Smith International, Inc.: *See*—
Shinn, Terry L., 4,455,040, Cl. 285-142.000.
Smith, Norman; and Riley, John G., to University of Maine, The Board of Trustees of the. Ignition and control system for fragmented wood-type fuel furnaces. 4,454,827, Cl. 110-234.000.
Smith, Peter W.; and Tomlinson, Walter J., III, to Bell Telephone Laboratories, Incorporated. High speed optical switch and time division optical demultiplexer using a control beam at a linear/nonlinear interface. 4,455,643, Cl. 370-4.000.
Smith, Richard J.: *See*—
Dreibelbis, Richard C.; and Smith, Richard J., 4,454,891, Cl. 137-216.000.
Smith, Robert J., to Chivas Products Ltd. Four-way electrical switch. 4,455,459, Cl. 200-5.00R.
Smolanoff, Joel R., to Rohm and Haas Company. Arthropod repellents. 4,455,308, Cl. 424-248.570.
Smoroi, Michael E.: *See*—
Haas, Rudy E.; Smoroi, Michael E.; Tobin, Curtis L.; and Walker, James J., Jr., 4,454,641, Cl. 29-157.30R.
Smyser, Granville L.; and Cengel, John A., to Standard Oil Company (Indiana). Oxidized mannich condensation product. 4,455,244, Cl. 252-51.50R.
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Klein, John F.; Bhansali, Chandra K.; Fox, Thomas J.; Smyth, Richard T.; and Zatorski, Raymond A., 4,455,470, Cl. 219-121.0PP.
Snow, William E., to American Cast Iron Pipe Company. Method for coating the interior surface of metal pipes. 4,455,329, Cl. 427-234.000.
Snyder, Arthur R.: *See*—
Brownell, George L.; Collier, Melba; Hall, William E.; Morgan, Howard H., Jr.; and Snyder, Arthur R., 4,455,446, Cl. 585-850.000.
Snyder, Nevin: *See*—
Roth, William F.; and Snyder, Nevin, 4,455,182, Cl. 156-215.000.
S.A. Constructions Ferroviaires et Metalliques: *See*—
Cuylits, Jacques; Lenssen, Paul; and Chatelle, Philippe P., 4,454,819, Cl. 104-245.000.
Societe Anonyme d'Explosifs et de Produits Chimiques: *See*—
Spensley, Robert H.; and Ellis, John, 4,455,171, Cl. 106-104.000.
Societe Anoayme dite: Compagnie Europeenne pour l'Equipement Menager "CEPEM": *See*—
Gernez, Alain, 4,454,832, Cl. 118-634.000.
Societe E. Lacroix-Tous Artifices: *See*—
Billard, Alain A. A.; Calmettes, Hubert C. G.; and Encoyand, Roland C., 4,454,816, Cl. 102-430.000.
Societe Nationale Elf Aquitaine (Production): *See*—
Detienne, Jean-Louis; Levesque, Guy; and Tozzolino, Pierre, 4,455,262, Cl. 260-502.600.
Societe pour le Developpement de la Recherche Industrielle "SODRI": *See*—
Kerserho, Francois M., 4,455,172, Cl. 106-109.000.
Sohn, Chul H.: *See*—
Kampf, Richard S.; Sohn, Chul H.; and Khan, Aurangzeb K., 4,454,939, Cl. 198-341.000.
Solar Structures Corp.: *See*—
Sitzler, Edward R.; and Moore, Fred W., 4,454,703, Cl. 52-788.000.
Solmat Systems, Ltd.: *See*—
Lahav, Noam, 4,455,226, Cl. 210-170.000.

Solsky, Yakov P.: *See*—
Portnyagina, Vera A.; Karp, Valentina K.; Barkova, Irina S.; Trinus, Fedor P., Mokhort, Nikolai A.; Fadeicheva, Alexandra G.; Kozhushko, Galina I.; Ryabukha, Tatyana K.; Panteleimonov, Alexandr G.; Kljushin, Viktor V.; Dobrovolsky, Jury N.; Kirichek, Larisa M.; Medvedovsky, Adolf A.; Getman, Galina A.; Usenko, Jury D.; Sidelnikov, Viktor M.; Danilevsky, Nikolai F.; and Solsky, Yakov P., 4,455,312, Cl. 424-251.000.

Soo, Pyong N.; and Lai, John T., to B. F. Goodrich Company, The. 2-Keto-diazacycloalkane-urethane oligomers and U-V light stabilized compositions. 4,455,401, Cl. 524-91.000.

Sony Corporation: *See*—
Saito, Kenzo, 4,454,976, Cl. 226-118.000.
Tsukamura, Yoshihiro, 4,455,579, Cl. 358-310.000.
Uzuka, Mitsuo, 4,455,515, Cl. 318-254.000.
Yamamoto, Yoshihiro; and Kawakami, Hiromi, 4,455,573, Cl. 358-198.000.

Soomet, Valdur: *See*—
Creteau, Denis; Caspar, Roman; Krishnan, Ramamurthy G.; Malashenko, Alexander; Bryce, Rodney H.; Soomet, Valdur; and Deperis, Giovanni, 4,455,197, Cl. 162-343.000.

Sorenson, Paul D., to Medtronic, Inc. Roller-ball ultrasonic imaging module. 4,454,764, Cl. 73-642.000.

Spamer, Alfred B.; and Klueber, William J. Device and method for forming in situ horizontal concrete slabs. 4,455,269, Cl. 264-31.000.

Spamer, William S., to Mead Corporation, The. Gravity feed display unit. 4,454,948, Cl. 211-49.00D.

Spann, Chris R., to General Motors Corporation. Power steering gear and open center rotary valve therefor. 4,454,801, Cl. 91-375.00A.

Specialty Devices, Inc.: *See*—
George, Phillip E., 4,454,868, Cl. 128-69.000.

Spensley, Robert H.; and Ellis, John, to Societe Anonyme d'Explosifs et de Produits Chimiques. Reactivatable set-inhibited cementitious compositions. 4,455,171, Cl. 106-104.000.

Sperry Corporation: *See*—
Schultz, Ralph H., 4,455,583, Cl. 360-78.000.
Shelly, Randolph D. W., 4,455,545, Cl. 336-200.000.
Sierk, Randall L.; and Freitag, Lonny R., 4,454,783, Cl. 74-471.00R.

Spiegel, Leo: *See*—
Sharp, Harper E.; Spiegel, Leo; Masters, Richard M.; Howatt, John R.; and Walker, Gary E., 4,454,756, Cl. 73-151.000.

Spreadbury, Robert J.: *See*—
Engel, Joseph C.; Hanson, Richard E.; Simms, Kenneth W.; and Spreadbury, Robert J., 4,455,595, Cl. 362-265.000.

Stalzer, Henry: *See*—
Dolan, Donald T.; and Stalzer, Henry, 4,455,562, Cl. 346-154.000.

Standard Manufacturing Company: *See*—
Oswald, Norman D.; Franklin, Carl M.; Gutzler, Marc H.; and Mankey, Harry S., 4,454,925, Cl. 180-22.000.

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Dria, Dennis E.; and Bremer, Noel J., 4,455,434, Cl. 549-260.000.
Ecuer, John H.; and Watkins, Michael D., 4,454,747, Cl. 73-1.00H.

Standard Oil Company (Indiana): *See*—
Schubert, John C.; and LeDuc, Edward C., 4,455,272, Cl. 264-53.000.
Sintim-Damoa, Kwame; Reddy, Srinivasa S. N.; and McCormick, E. Scott, 4,455,202, Cl. 204-68.000.
Smyser, Granville L.; and Cengel, John A., 4,455,244, Cl. 252-51.50R.
York, Earl D.; and Knepper, Jay C., 4,454,915, Cl. 166-259.000.

Standard Tube Canada Limited: *See*—
Cudini, Ivano G., 4,454,745, Cl. 72-370.000.

Stanley, Philip E.: *See*—
Cushing, David E.; Lemay, Richard A.; Stanley, Philip E.; and Woods, William E., 4,455,606, Cl. 364-200.000.

Stapenell, Ralph H. Pressure-relieving closure panel. 4,454,686, Cl. 49-141.000.

Stapp, Paul R., to Phillips Petroleum Company. Cyanohydrocarbyl substituted sulfonates and their use in post primary oil recovery. 4,455,254, Cl. 252-8.55D.

Stapp, Paul R., to Phillips Petroleum Company. Cyanohydrocarbylated alkoxylates and glycerides. 4,455,255, Cl. 252-8.55D.

Static Inc.: *See*—
Testone, Anthony Q., 4,454,621, Cl. 15-1.50R.

Stefanelli, Paul J. Collapsible receptacle for storage of bulk items. 4,454,950, Cl. 211-60.00R.

Stegens, Ronald E., to International Telecommunications Satellite Organization (INTELSAT). Push-pull microwave amplifier. 4,455,536, Cl. 330-286.000.

Stensson, Bo G.: *See*—
Emilsson, Fred S.; Severinsson, Lars M.; and Stensson, Bo G., 4,454,932, Cl. 188-59.000.

Stephan, Michel: *See*—
Juillet, Jacques; Olmi, Eugenio; and Stephan, Michel, 4,454,958, Cl. 220-339.000.

Stevenson, Philip E.: *See*—
Vanderkooi, Nicholas, Jr.; Stevenson, Philip E.; and Welgos, Robert J., 4,455,417, Cl. 528-272.000.

Stewart, Kenneth W., Sr., to AMBAC Industries, Incorporated. Windshield wiper mechanism. 4,455,511, Cl. 318-9.000.

StLawrence, John J. Apparatus for winding filaments. 4,454,968, Cl. 223-46.000.

Stocks, Charles D.: *See*—
Gregory, Don A.; and Stocks, Charles D., 4,455,532, Cl. 324-457.000.

Stockton, Thomas R., to Ford Motor Company. Four speed torque converter transaxle and accessory drive system. 4,454,786, Cl. 74-688.000.

Stoger, Klaus: *See*—
Birkle, Siegfried; Stoger, Klaus; and De Vries, Hans, 4,455,201, Cl. 204-58.000.

Stol, Israel: *See*—
Ecer, Gunes M.; Stol, Israel; and Lessmann, Gerald G., 4,455,471, Cl. 219-125.120.

Stoller, David A., Sr.; Culler, William B.; and Wiesner, Paul E., to Portec, Inc. Bulk freight rail car with metallized interior surfaces. 4,454,823, Cl. 105-423.000.

Stoltenberg, Manfred: *See*—
Arnold, Dieter; Bartels, Jorg; Lenzmann, Heinrich; Jacobsen, Gunter; Wendt, Heinz; and Stoltenberg, Manfred, 4,455,439, Cl. 568-302.000.

Stormby, Nils G. I. Automatic apparatus for applying cover-slips on slides. 4,455,188, Cl. 156-355.000.

Stormon, Harry J.: *See*—
Gurries, Raymond A.; and Stormon, Harry J., 4,454,666, Cl. 37-118.00R.

Storti, Sandro: *See*—
Murari, Bruno; Storti, Sandro; Morelli, Marco; and Bozotti, Carlo, 4,455,585, Cl. 361-18.000.

Stouky, R. Jon: *See*—
Kwech, Horst; and Stouky, R. Jon, 4,454,957, Cl. 220-323.000.

Strahan, Virgil H.; James, Kenneth A.; and Quick, William H., to Rockwell International Corporation. Fabrication of birefringent electromagnetic transmission line. 4,455,267, Cl. 264-1.300.

Stranko, Thomas A.: *See*—
Griscom, Robert E.; and Stranko, Thomas A., 4,455,601, Cl. 364-200.000.

Strobl, Fred. Brick fastening device. 4,454,699, Cl. 52-585.000.

Strohmeyer, Charles, Jr., to Electrodyne Research Corporation. Steam generator having a circulating fluidized bed and a dense pack heat exchanger for cooling the recirculated solid materials. 4,454,838, Cl. 122-4.000.

Strong, Donald. Attachment for a miter gauge. 4,454,793, Cl. 83-421.000.

Stubblefield, Jerry D. Athletic shoe sole. 4,454,662, Cl. 36-91.000.

Stucki, Samuel, to BBC Brown, Boveri & Company, Limited. Process for the electrolytic production of hydrogen peroxide. 4,455,203, Cl. 204-84.000.

Sturm, Michael R. Hot glass holding tool. 4,455,043, Cl. 294-19.00R.

Suchomel, George. Producing pokerwork designs on wood substrates. 4,455,183, Cl. 156-219.000.

Sudler, Roland, to VDO Adolf Schindling AG. Two-phase stepping motor. 4,455,499, Cl. 310-49.00R.

Suenaga, Tadayoshi: *See*—
Noda, Kanji; Nakagawa, Akira; Yamagata, Tetsuya; Kobayasi, Masasi; Suenaga, Tadayoshi; Tokubuchi, Fumiaki; Noguchi, Kazuki; Yoshitake, Tadaaki; Tsuji, Masayoshi; and Ide, Hiroyuki, 4,455,146, Cl. 604-897.000.

Suetterlin, Norbert: *See*—
Fink, Herbert; Kniese, Heiner; Suetterlin, Norbert; Mueller, Klaus; and Siol, Werner, 4,455,342, Cl. 428-265.000.

Sugawara, Tsutomu, to Tokyo Shibaura Denki Kabushiki Kaisha. Frequency characteristic adjusting apparatus. 4,455,535, Cl. 330-126.000.

Sugihara, Kazuyoshi: *See*—
Tojo, Toru; and Sugihara, Kazuyoshi, 4,455,501, Cl. 310-328.000.

Sugimoto, Naohiko: *See*—
Kojima, Tetsuro; Ishimaru, Shingo; Sugimoto, Naohiko; and Ikeda, Tadashi, 4,455,368, Cl. 430-507.000.

Sugiura, Masaki: *See*—
Chibata, Ichiro; Kisumi, Masahiko; Sugiura, Masaki; and Takagi, Tsutomu, 4,455,372, Cl. 435-107.000.

Sugiura, Masamichi; Kitagawa, Tsuneo; and Yoshida, Keiji, to Minolta Camera Kabushiki Kaisha. Copying apparatus equipped with control device. 4,455,080, Cl. 355-14.0SH.

Sugiyama, Masaki: *See*—
Ochi, Mitsutoshi; Kotera, Yoshinobu; and Sugiyama, Masaki, 4,455,347, Cl. 428-369.000.

Sulzer Brothers Ltd.: *See*—
Meier, Werner, 4,455,339, Cl. 428-185.000.

Sumitomo Chemical Company, Limited: *See*—
Chiyoda, Tsutomu; Nakamura, Makoto; and Hasegawa, Shinichi, 4,455,440, Cl. 568-565.000.
Matsuyama, Kiyoshi; Ochi, Kenji; Ogawa, Hiroyuki; and Suzuki, Takatoshi, 4,455,344, Cl. 428-327.000.

Sumitomo Light Metal Industries, Ltd.: *See*—
Terai, Shiro; Sato, Shiro; Kato, Sakae; Imai, Masaya; Inumaru, Susumu; and Yoshida, Masahiro, 4,454,748, Cl. 73-19.000.

Sun Chemical Corporation: *See*—
Floyd, William C.; and North, Bernard F., 4,455,416, Cl. 528-245.000.

Sunami, Hideo: *See*—
Masuhara, Toshiaki; Minato, Osamu; Shimohigashi, Katsuhiro; Masuda, Hiroo; Sunami, Hideo; Sakai, Yoshio; Kamigaki, Yoshiaki; Takeda, Eiji; and Hagiwara, Yoshimune, 4,455,495, Cl. 307-44.000.

Sunouchi, Akio: *See*—
Fujino, Masahisa; Sunouchi, Akio; Konno, Tatsuo; and Suzuki, Ryuji, 4,455,072, Cl. 354-153.000.

Sunset Ltd.: *See*—
Guibert, Raul, 4,455,478, Cl. 219-400.000.

Sutter, Leroy V., Jr. Coupling circuit for use with a transversely excited gas laser. 4,455,658, Cl. 372-38.000.

Suzuki, Hiroyuki; Taoka, Masayuki; and Watanabe, Kiyoshi, to Sharp Kabushiki Kaisha. Disc record player with automatic loading/unloading assembly. 4,455,637, Cl. 369-77.100.

Suzuki, Masatoshi: *See*—
Shinozaki, Takashi; and Suzuki, Masatoshi, 4,454,719, Cl. 60-605.000.

Suzuki, Ryuji: *See*—
Fujino, Masahisa; Sunouchi, Akio; Konno, Tatsuo; and Suzuki, Ryuji, 4,455,072, Cl. 354-153.000.

Suzuki, Seigo; Eguchi, Seiji; and Moriya, Yoshiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Information transferring apparatus. 4,455,608, Cl. 364-200.000.

Suzuki, Soohei. Dehumidification air-conditioning method with solar heat. 4,454,727, Cl. 62-235.100.

Suzuki, Taihei: *See*—
Mijioka, Yoshiaki; Yamamoto, Kouichi; Suzuki, Taihei; and Mukaemachi, Takuji, 4,455,645, Cl. 370-16.000.

Suzuki, Takatoshi: *See*—
Matsuyama, Kiyoshi; Ochi, Kenji; Ogawa, Hiroyuki; and Suzuki, Takatoshi, 4,455,344, Cl. 428-327.000.

Suzuki, Takeshi: *See*—
Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Suzuki, Takeshi; Kinoshita, Kensaku; Mishima, Mannen; Katoh, Yoshinori; Kobayashi, Seiichi; Murakami, Manabu; and Yamada, Kouzi, 4,455,316, Cl. 424-274.000.

Suzuki, Yasuo; and Nagasawa, Masanori, to Fujitsu Limited. Complementary metal-insulated semiconductor memory decoder. 4,455,629, Cl. 365-230.000.

Suzuki, Yoshitsugu; Iizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, to Yazaki Corporation. Method of processing end portions of covered wires. 4,454,652, Cl. 29-863.000.

Suzuki, Yukio; and Matsuda, Yoshihiko, to Toyota Jidosha Kabushiki Kaisha. Method and apparatus for controlling the air-fuel ratio in an internal-combustion engine. 4,454,846, Cl. 123-489.000.

Svenska Rotor Maskiner Aktiebolag: *See*—
Werner-Larsen, Olaf, 4,455,131, Cl. 418-201.000.

Swanson, Billy L., to Phillips Petroleum Company. Wellbore fluid. 4,455,241, Cl. 252-8.55R.

Swanson, Russell K. Therapeutic chair assembly. 4,454,867, Cl. 128-57.000.

Sweed, Norman H., to Atlantic Richfield Company. Molybdenum epoxidation catalyst recovery. 4,455,283, Cl. 423-53.000.

Swett, H. Darwin: *See*—
Schafer, Tony L.; Schafer, Stephen A.; Schafer, Gregory L.; and Swett, H. Darwin, 4,454,860, Cl. 126-110.00R.

Symonds, Dean H.; and Brandon, David E., to Deere & Company. Control transducer. 4,455,555, Cl. 340-870.310.

Syrmis, Victor, to Chocolate Photos. Method of making chocolate candy sculpture of photo image. 4,455,320, Cl. 426-383.000.

Syukuda, Yukio; Watanabe, Hideo; and Matsuyama, Shigeo, to Takeda Chemical Industries, Ltd. Method for producing pertussis toxoid. 4,455,297, Cl. 424-92.000.

Szymanski, Chester D.; and Neigel, Dennis, to National Starch and Chemical Corporation. Process for reacting quaternary ammonium monomers in the presence of anionic polymers. 4,455,408, Cl. 325-291.000.

Tabak, Samuel A.: *See*—
Angevine, Philip J.; Carroll, Michael B.; Shih, Stuart S.; and Tabak, Samuel A., 4,455,216, Cl. 208-11.0LE.

Tabuchi, Toshiaki; and Shimazawa, Yoichi, to Sharp Kabushiki Kaisha. Compact size plunger pump. 4,455,127, Cl. 417-418.000.

Tachibana, Kunitaka: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,455,163, Cl. 71-86.000.

Taisei Corporation: *See*—
Yamaguchi, Tadashi; Ono, Takayuki; Hirata, Michitoshi; and Yokoyama, Toshihiko, 4,455,179, Cl. 149-109.600.

Tajima, Tetsuro: *See*—
Sakitani, Katsumi; Maekawa, Takashi; Fujimoto, Satoru; Tajima, Tetsuro; and Hiroyasu, Makoto, 4,455,129, Cl. 418-82.000.

Takada, Masahiko: *See*—
Yamane, Kazumasa; Kobayashi, Masahiro; and Takada, Masahiko, 4,455,407, Cl. 525-208.000.

Takagi, Akira: *See*—
Yoshida, Tetsuo; Ujihara, Motohiro; Watanabe, Takeshi; and Takagi, Akira, 4,455,327, Cl. 427-131.000.

Takagi, Tsutomu: *See*—
Chibata, Ichiro; Kisumi, Masahiko; Sugiura, Masaki; and Takagi, Tsutomu, 4,455,372, Cl. 435-107.000.

Takahashi, Akio: *See*—
Hoftiezer, Henry W.; Watts, Daniel J.; and Takahashi, Akio, 4,455,257, Cl. 260-124.00R.

Takahashi, Kenji; Nagahara, Shusaku; Izumita, Morishi; Sato, Kazuhiro; Akiyama, Toshiyuki; and Ozawa, Naoki, to Hitachi, Ltd. Color imaging apparatus. 4,455,569, Cl. 358-51.000.

Takahaski, Tadashi: *See*—
Shimizu, Kyoichi; Sato, Kiyoshi; and Takahaski, Tadashi, 4,455,571, Cl. 358-138.000.

Takaki, Masaoki: *See*—
Masui, Shoichi; Oonari, Mikihiko; Yamanaka, Kunio; and Takaki, Masaoki, 4,455,619, Cl. 364-900.000.

Takanashi, Akihiro: *See*—
Hosaka, Sumio; Harada, Tatsuo; and Takanashi, Akihiro, 4,455,485, Cl. 250-234.000.

Takano, Akira, to Olympus Optical Co., Ltd. Laser apparatus utilizing marking laser for triggering operative laser. 4,454,882, Cl. 128-395.000.

Takano, Toshimasa: *See*—
Mukai, Hideo; and Takano, Toshimasa, 4,455,078, Cl. 355-3.0CH.

Takara Co., Ltd.: *See*—
Ogawa, Iwakichi, 4,454,679, Cl. 446-290.000.

Takase, Sadao, to Nissan Motor Company, Limited. Data sampling system for electronic engine controllers. 4,454,845, Cl. 123-478.000.

Takasuga, Yutaka, to Bridgestone Tire Company Limited. Sheet joining apparatus. 4,455,189, Cl. 156-502.000.

Takatsu, Haruyoshi; and Sato, Hisato, to Dainippon Inc.; and Chemicals, Inc. Nematic halogen Compound. 4,455,443, Cl. 570-129.000.

Takatsu, Haruyoshi: *See*—
Sasaki, Makoto; Takatsu, Haruyoshi; Sato, Hisato; Shimamura, Tuneo; Toriyama, Kazuhisa; and Nakagomi, Tamihito, 4,455,261, Cl. 260-465.00D.

Takeda Chemical Industries, Ltd.: *See*—
Nara, Kiyoshi; Katamoto, Kazuyoshi; Ohkido, Sadao; Yamamoto, Isao; and Yanome, Hiroshi, 4,455,306, Cl. 424-246.000.
Syukuda, Yukio; Watanabe, Hideo; and Matsuyama, Shigeo, 4,455,297, Cl. 424-92.000.

Takeda, Eiji: *See*—
Masuhara, Toshiaki; Minato, Osamu; Shimohigashi, Katsuhiro; Masuda, Hiroo; Sunami, Hideo; Sakai, Yoshio; Kamigaki, Yoshiaki; Takeda, Eiji; and Hagiwara, Yoshimune, 4,455,495, Cl. 307-44.000.

Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, to Meiji Seika Kaisha, Ltd. Herbicidal compositions and herbicidal processes. 4,455,163, Cl. 71-86.000.

Takematsu, Tetsuo; Kikkawa, Nobuyuki; and Ogawa, Hideaki, to Idemitsu Kosan Company Limited. N-(α,α-Dialkylbenzyl)-phenylacetamide compounds and herbicidal compositions containing said compounds. 4,455,164, Cl. 71-118.000.

Takeuchi, Motohiko: *See*—
Yanagida, Seiichi; Takeuchi, Motohiko; and Marumoto, Hideki, 4,455,582, Cl. 360-77.000.

Tallon, Jacques, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Gas bleed cock. 4,454,894, Cl. 137-599.000.

Talmon, Wolfgang: *See*—
Dworak, Wilhelm; Mayer, Siegfried; Muller, Karl-Heinz; Talmon, Wolfgang; and Wolff, Gunter, 4,455,130, Cl. 418-132.000.

Tamai, Masayoshi, to Fuji Xerox Company, Ltd. Formation of a multi-nozzle ink jet. 4,455,192, Cl. 156-628.000.

Tamaoki, Norimasa: *See*—
Shinkai, Kazuteru; Kohno, Masaru; Nakagawa, Yukio; Tamaoki, Norimasa; and Saito, Kiyoshi, 4,454,767, Cl. 73-861.180.

Tammen, Bobby J. Liquid metal solar power system. 4,454,865, Cl. 126-438.000.

Tamura, Kaoru; and Aizawa, Hidetoshi, to Hitachi, Ltd. Pulse width modulation inverter. 4,455,599, Cl. 363-138.000.

Tanabe Seiyaku Co., Ltd.: *See*—
Chibata, Ichiro; Kisumi, Masahiko; Sugiura, Masaki; and Takagi, Tsutomu, 4,455,372, Cl. 435-107.000.

Tanaka, Kazuo: *See*—
Niwa, Yukichi; Ohwada, Mitsutoshi; Ogino, Yasuo; Tanaka, Kazuo; and Koumura, Noboru, 4,455,065, Cl. 350-445.000.

Tanaka, Masamichi; and Wada, Hiroto, to Tokyo Shibaura Denki Kabushiki Kaisha. Electret device. 4,455,494, Cl. 307-400.000.

Tanaka, Nobuyoshi: *See*—
Hashimoto, Seiji; and Tanaka, Nobuyoshi, 4,455,574, Cl. 358-213.000.

Tanaka, Toshio; Nakagawa, Sumio; and Toudo, Kenzi, to Hitachi, Ltd. Combustion control circuit. 4,455,656, Cl. 371-57.000.

Tanaka, Yuichi: *See*—
Ogino, Kohzo; Shiomi, Tomikazu; Tanaka, Yuichi; and Yamashita, Seichi, 4,455,334, Cl. 428-36.000.

Tanaka, Yusuke: *See*—
Satake, Takeo; Ishigami, Masahisa; Arimoto, Kunio; Matsuba, Yorishige; Inoue, Yoshikazu; Tanaka, Yusuke; and Kanda, Kohei, 4,455,149, Cl. 44-51.000.

Tanimoto, Akira; and Saiji, Mitsuhiro, to Sharp Kabushiki Kaisha. Intonation-varying audio output device in electronic translator. 4,455,615, Cl. 364-513.500.

Tanimoto, Akira: *See*—
Inoue, Tomohiro; and Tanimoto, Akira, 4,454,796, Cl. 84-1.030.

Taoka, Masayuki: *See*—
Suzuki, Hiroyuki; Taoka, Masayuki; and Watanabe, Kiyoshi, 4,455,637, Cl. 369-77.100.

Tarnowski, Andrew A., to Image Graphics, Inc. System and film gate for accurately imaging information on a film by a charged particle beam. 4,455,563, Cl. 346-161.000.

Tarumi, Noriyoshi: *See*—
Miwa, Tadashi; Kimura, Kiyoshi; Komiya, Yukiharu; and Tarumi, Noriyoshi, 4,455,079, Cl. 355-3.0TR.

Tarvis, Robert J., Jr. Temperature controlled valve. 4,454,983, Cl. 236-93.00A.

Tatum, Harold E., Sr. Cloth welding anvil. 4,455,191, Cl. 156-580.200.

Taylor, George. Wheel chairs. 4,455,029, Cl. 280-5.280.

Taylor-Smith, Ernest J., to Koppers International Canada Ltd. Railroad spike. 4,454,986, Cl. 238-369.000.

Tebel Machinefabrieken B.V.: *See*—
van der Sloot, Bart; and Epema, Sijtse, 4,454,685, Cl. 49-110.000.

Techmedica, Inc.: *See*—
Pratt, Clyde R.; and Carignan, Roger G., 4,454,875, Cl. 128-92.00B.

Techsight Corporation: *See*—
Weber, Hermann P., 4,455,322, Cl. 427-8.000.

Teixeira, Manuel G.: *See*—
Jones, Harold A.; Teixeira, Manuel G.; and Verrier, Arthur N., 4,454,997, Cl. 242-47.010.

Teledyne Industries, Inc.: *See*—
Rorer, David L.; and James, John E., 4,455,357, Cl. 429-179.000.

Telesciences, Inc.: *See*—
Fox, James R.; Horwitz, Michael J.; and Charles, Jay R., 4,455,644, Cl. 370-13.000.

Teletype Corporation: *See*—
Ramig, Robert J., Jr., 4,454,809, Cl. 101-93.300.

Temple, Chester S., to PPG Industries, Inc. Aqueous treating composition for glass fiber strands used to produce mats for thermoplastics. 4,455,343, Cl. 428-285.000.

Terada, Hirokiyo: *See*—
Hanada, Masamichi; and Terada, Hirokiyo, 4,454,728, Cl. 62-324.100.

Terai, Shiro; Sato, Shiro; Kato, Sakae; Imai, Masaya; Inumaru, Susumu; and Yoshida, Masahiro, to Sumitomo Light Metal Industries, Ltd. Apparatus for measuring the content of hydrogen dissolved in a molten metal. 4,454,748, Cl. 73-19.000.

Terchek, Richard L.: *See*—
Dillon, Kenneth R.; and Terchek, Richard L., 4,455,354, Cl. 428-568.000.

Terry, F. Duncan: *See*—
Haag, George A.; Fogg, O. Douglas; Greenley, Gordon A.; Shepard, Steve A.; and Terry, F. Duncan, 4,455,624, Cl. 364-900.000.

Testone, Anthony Q., to Static Inc. Sheet and web cleaner. 4,454,621, Cl. 15-1.50R.

Texaco Inc.: *See*—
Brunner, Paul J.; Christopher, Charles A.; and Pindell, Robert G., 4,454,772, Cl. 73-863.310.
Brunner, Paul J.; Christopher, Charles A.; and Pindell, Robert G., 4,454,773, Cl. 73-863.310.

Theeuwes, Felix; Barclay, Brian; and Cortese, Richard, to ALZA Corporation. Osmotic device for dispensing two different medications. 4,455,143, Cl. 604-890.000.

Theeuwes, Felix, to ALZA Corporation. Dispensing device with internal drive. 4,455,145, Cl. 604-892.000.

Theiler, Werner C., to American Eyelet Co., Inc. Terminal cap for accommodating terminal posts. 4,455,059, Cl. 339-224.000.

Thelinge, Jean: *See*—
Bourbonnaud, Marc; and Thelinge, Jean, 4,454,851, Cl. 123-557.000.

Therafield Holdings Limited: *See*—
Fellus, Victor M., 4,454,883, Cl. 128-422.000.

Thermocatalytic Corporation: *See*—
Craig, Laurence B.; and Farina, Alfred J., 4,455,196, Cl. 162-152.000.

Thomas & Betts Corporation: *See*—
Mariani, Remo, 4,455,057, Cl. 339-97.00C.

Thomas, John. Dished reflector and method of making same. 4,455,557, Cl. 343-912.000.

Thompson, David J., to Imperial Chemical Industries PLC. Pleochroic anthraquinone dyes. 4,455,253, Cl. 252-299.100.

Thompson, Kenneth P., to Champion International Corporation. Production of laminate polyester and paperboard. 4,455,184, Cl. 156-244.110.

Thomson-CSF: *See*—
Delagebeaudeuf, Daniel; and Nuyen, Trong L., 4,455,564, Cl. 357-22.000.
Henriot, Marie C.; and Janer, Patrick, 4,455,540, Cl. 333-202.000.
Moraillon, Jean Y., 4,455,533, Cl. 329-126.000.

Thoratec Laboratories Corporation: *See*—
Downie, David E.; Schneiderman, Gary; Shulse, Eric D.; and Withers, Stanley J., 4,454,643, Cl. 29-270.000.

Thorn Emi Ferguson Limited: *See*—
Topping, Douglas R. P.; Walton, David W.; and Sage, Leslie R., 4,455,673, Cl. 381-12.000.

Thornton, Jack L. Truss web saw. 4,454,794, Cl. 83-471.300.

Thorsness, Wilfred. Multi-directional rotary saw. 4,454,901, Cl. 144-218.000.

Thuen, Judy M.: *See*—
Hinrichs, Richard J.; and Thuen, Judy M., 4,455,268, Cl. 264-23.000.

Thyssen Industrie Aktiengesellschaft: *See*—
Raschbichler, Hans-Georg, 4,454,820, Cl. 104-281.000.

Tibussek, Fritz, to Wirth Maschinen-und Bohrgerate-Fabrik GmbH. Holding device for boring head tools or the like. 4,454,923, Cl. 175-363.000.

Tikhonov, Arkady K.: *See*—
Filippov, Vladimir I.; Parshin, Nikolai I.; Barabanov, Igor V.; Marmer, Eduard N.; Puzanov, Alexandr F.; Lobanov, Alexandr B.; Usaty, Jury P.; Gerasimov, Vladimir I.; Tikhonov, Arkady K.; and Turulin, Viktor N., 4,455,177, Cl. 148-155.000.

Timari, Jali. Lock means. 4,454,672, Cl. 42-16.000.

Ting, Pauline B.; and Simpson, Howard D., to Union Oil Company of California. Catalyst and method for impregnating at a pH less than one. 4,455,390, Cl. 502-314.000.

Toa Wool Spinning & Weaving Co., Ltd.: *See*—
Kazama, Ken; Muramoto, Ikuo; Kusunoki, Yoshinobu; Ozaki, Kenji; and Fujii, Hideyuki, 4,455,259, Cl. 260-397.250.

Toastmaster, Inc.: *See*—
Clark, Robert H., 4,455,319, Cl. 426-233.000.

Tobin, Curtis L.: *See*—
Haas, Rudy E.; Smorol, Michael E.; Tobin, Curtis L.; and Walker, James J., Jr., 4,454,641, Cl. 29-157.30R.

Todd, Edward P. Drainage apparatus with vacuum control. 4,455,141, Cl. 604-319.000.

Tohoku Metal Industries, Ltd.: *See*—
Yamaguchi, Tadashi; Ono, Takayuki; Hirata, Michitoshi; and Yokoyama, Toshihiko, 4,455,179, Cl. 149-109.600.

Tojo, Toru; and Sugihara, Kazuyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Precision rotation mechanism. 4,455,501, Cl. 310-328.000.

Tokubuchi, Fumiaki: *See*—
Noda, Kanji; Nakagawa, Akira; Yamagata, Tetsuya; Kobayasi, Masasi; Suenaga, Tadayoshi; Tokubuchi, Fumiaki; Noguchi, Kazuki; Yoshitake, Tadaaki; Tsuji, Masayoshi; and Ide, Hiroyuki, 4,455,146, Cl. 604-897.000.

Tokuhara, Mitsuhiro, to Canon Kabushiki Kaisha. Original reader. 4,455,577, Cl. 358-294.000.

Tokumi Denshi Kogyo Kabushiki Kaisha: *See*—
Akira, Jingu, 4,455,457, Cl. 179-156.00R.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Itoh, Takehiko; and Sakamoto, Moriyoshi, 4,455,479, Cl. 219-405.000.
Matsumoto, Yukio; Aoshima, Terutaka; and Matsuo, Katsuharu, 4,455,480, Cl. 219-497.000.
Miyazaki, Yoshiro, 4,454,910, Cl. 165-32.000.
Mukai, Hideo; and Takano, Toshimasa, 4,455,078, Cl. 355-3.0CH.
Murakami, Kenji; and Hayashi, Seiji, 4,455,547, Cl. 338-308.000.
Sugawara, Tsutomu, 4,455,535, Cl. 330-126.000.
Suzuki, Seigo; Eguchi, Seiji; and Moriya, Yoshiaki, 4,455,608, Cl. 364-200.000.
Tanaka, Masamichi; and Wada, Hiroto, 4,455,494, Cl. 307-400.000.
Tojo, Toru; and Sugihara, Kazuyoshi, 4,455,501, Cl. 310-328.000.
Yanagida, Seiichi; Takeuchi, Motohiko; and Marumoto, Hideki, 4,455,582, Cl. 360-77.000.

Tominaga, Shinji; and Nakamura, Ikushi, to Minolta Camera Kabushiki Kaisha. Camera film drive motor control devices. 4,455,073, Cl. 354-173.110.

Tomishima, Yoshio; Kobayashi, Teiji; Shibahara, Hiroshi; and Nojima, Yasuhiro, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Method for suppressing bubbling in polymerization of vinyl chloride resin. 4,455,413, Cl. 526-344.200.

Tomlinson, Walter J., III: *See*—
Smith, Peter W.; and Tomlinson, Walter J., III, 4,455,643, Cl. 370-4.000.

Toppan Containers Co., Ltd.: *See*—
Yokowo, Koichi, 4,454,946, Cl. 206-600.000.

Toppan Printing Co., Ltd.: *See*—
Yokowo, Koichi, 4,454,946, Cl. 206-600.000.

Topping, Douglas R. P.; Walton, David W.; and Sage, Leslie R., to Thorn Emi Ferguson Limited. Stereo indicating circuit. 4,455,673, Cl. 381-12.000.

Toriyama, Kazuhisa: *See*—
Sasaki, Makoto; Takatsu, Haruyoshi; Sato, Hisato; Shimamura, Tuneo; Toriyama, Kazuhisa; and Nakagomi, Tamihito, 4,455,261, Cl. 260-465.00D.

Touch Activated Switch Arrays, Inc.: *See*—
Schuyler, David L., 4,455,452, Cl. 178-18.000.

Toudo, Kenzi: *See*—
Tanaka, Toshio; Nakagawa, Sumio; and Toudo, Kenzi, 4,455,656, Cl. 371-57.000.

Toyo Kohan Co., Ltd.: *See*—
Inui, Tsuneo; Kuroda, Hitoshi; Hizuka, Kenji; Kunishige, Fumio; and Kondo, Yoshikazu, 4,455,355, Cl. 428-595.000.

Toyo Seikan Kaisha Ltd.: *See*—
Ikeda, Masaomi; and Tsutsumi, Yotaro, 4,454,979, Cl. 229-52.00B.
Imazu, Katsuhiro; and Watanabe, Toshiaki, 4,454,960, Cl. 220-456.000.
Morimoto, Kenji; and Ashina, Masato, 4,455,225, Cl. 209-588.000.

Toyoda, Minoru, to Aisin Seiki Company, Ltd. Key holder. 4,454,737, Cl. 70-456.00R.

Toyota Jidosha Kabushiki Kaisha: *See*—
Suzuki, Yukio; and Matsuda, Yoshihiko, 4,454,846, Cl. 123-489.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Uchida, Shigekatsu; Akatsuka, Takao; and Kawamura, Takahide, 4,454,843, Cl. 123-179.00B.

Tozzolino, Pierre: *See*—
Detienne, Jean-Louis; Levesque, Guy; and Tozzolino, Pierre, 4,455,262, Cl. 260-502.600.

Trans-Ad Corporation: *See*—
Morgenstern, Johannes, 4,454,671, Cl. 40-607.000.

Trinus, Fedor P.: *See*—
Portnyagina, Vera A.; Karp, Valentina K.; Barkova, Irina S.; Trinus, Fedor P.; Mokhort, Nikolai A.; Fadeicheva, Alexandra G.; Kozhushko, Galina I.; Ryabukha, Tatyana K.; Panteleimonov, Alexandr G.; Kljushin, Viktor V.; Dobrovolsky, Jury N.; Kirichek, Larisa M.; Medvedovsky, Adolf A.; Getman, Galina A.; Usenko, Jury D.; Sidelnikov, Viktor M.; Danilevsky, Nikolai F.; and Solsky, Yakov P., 4,455,312, Cl. 424-251.000.

Tromp, Wouter T.: *See*—
Reinhold, Immo; and Tromp, Wouter T., 4,454,766, Cl. 73-861.120.

TRW Inc.: *See—*
Rau, Jim L., 4,454,716, Cl. 60-422.000.
Tsang, Peter H.: *See—*
Bekesi, Julius G.; Holland, James F.; and Tsang, Peter H., 4,455,379, Cl. 436-504.000.
Tschirch, Richard P.; Sidman, Kenneth R.; and Arons, Irving J., to United States of America, National Aeronautics and Space Administration. Heat resistant protective hand covering. 4,454,611, Cl. 2-161.00R.
Tschant, Edgar: *See—*
Schwierz, Gunter; Schittenhelm, Rudolf; Schmitt, Gunter; and Tschunt, Edgar, 4,455,667, Cl. 378-4.000.
Tsuji, Masayoshi: *See—*
Noda, Kanji; Nakagawa, Akira; Yamagata, Tetsuya; Kobayasi, Masasi; Suenaga, Tadayoshi; Tokubuchi, Fumiaki; Noguchi, Kazuki; Yoshitake, Tadaaki; Tsuji, Masayoshi; and Ide, Hiroyuki, 4,455,146, Cl. 604-897.000.
Tsukamoto, Goro: *See—*
Sakamoto, Fumio; Ikeda, Shoji; and Tsukamoto, Goro, 4,455,310, Cl. 424-250.000.
Tsukamura, Yoshihiro, to Sony Corporation. Apparatus for producing a color picture on recording paper. 4,455,579, Cl. 358-310.000.
Tsunekawa, Tokuichi: *See—*
Kato, Masatake; and Tsunekawa, Tokuichi, 4,455,071, Cl. 354-431.000.
Tsuruoka, Takashi: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,455,163, Cl. 71-86.000.
Tsutsui, Tatsuhiko; Sema, Toru; and Unezawa, Tsuneo, to Lion Corporation. Record cleaning device. 4,455,636, Cl. 369-72.000.
Tsutsumi, Yotaro: *See—*
Ikeda, Masaomi; and Tsutsumi, Yotaro, 4,454,979, Cl. 229-52.00B.
Turulin, Viktor N.: *See—*
Filippov, Vladimir I.; Parshin, Nikolai I.; Barabanov, Igor V.; Marmer, Eduard N.; Puzanov, Alexandr F.; Lobanov, Alexandr B.; Usaty, Jury P.; Gerasimov, Vladimir I.; Tikhonov, Arkady K.; and Turulin, Viktor N., 4,455,177, Cl. 148-155.000.
Tuttle, William I., to Bostwick Steel Lath Company, The. Motion bead filler strip. 4,454,696, Cl. 52-346.000.
Tweedle, Michael F., to New England Nuclear Corporation. Accelerators for forming cationic technetium complexes useful as radiodiagnostic agents. 4,455,291, Cl. 424-1.100.
UBE Industries, Ltd.: *See—*
Yajima, Seishi; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamamura, Takemi, 4,455,414, Cl. 528-30.000.
Uchida, Shigekatsu; Akatsuka, Takao; and Kawamura, Takahide, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automatic engine stop and start system. 4,454,843, Cl. 123-179.00B.
Uddeholms Aktiebolag: *See—*
Bruce, Lars M., 4,455,353, Cl. 428-553.000.
Ueda, Yasuo: *See—*
Inamura, Kiyonari; Ueda, Yasuo; Furushima, Nobumasa; and Shigaki, Keisuke, 4,455,609, Cl. 364-414.000.
Ufermann, Werner, to G. Siempelkamp GmbH & Co. Apparatus for forming mats, especially for the production of particleboard. 4,454,940, Cl. 198-374.000.
Ugine Aciers: *See—*
Brancaz, Jean; and Marizy, Georges, 4,455,166, Cl. 75-60.000.
Ujihara, Motohiro: *See—*
Yoshida, Tetsuo; Ujihara, Motohiro; Watanabe, Takeshi; and Takagi, Akira, 4,455,327, Cl. 427-131.000.
Ullman, John E., to Mead Corporation, The. Heat control system for packaging machine. 4,454,704, Cl. 53-76.000.
Umebayashi, Kazuyuki, to Aisin Seiki Kabushiki Kaisha. Telephone transmission system on a road-vehicle. 4,455,454, Cl. 179-2.00E.
Umemoto, Makoto: *See—*
Hirano, Tsumoru; Umemoto, Makoto; and Yagihara, Morio, 4,455,366, Cl. 430-381.000.
Umezawa, Hamao; Umezawa, Sumio; Ishido, Yoshiharu; and Fukatsu, Shunzo, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. 2'-Modified kanamycins and production thereof. 4,455,419, Cl. 536-13.800.
Umezawa, Sumio: *See—*
Umezawa, Hamao; Umezawa, Sumio; Ishido, Yoshiharu; and Fukatsu, Shunzo, 4,455,419, Cl. 536-13.800.
Unezawa, Tsuneo: *See—*
Tsutsui, Tatsuhiko; Sema, Toru; and Unezawa, Tsuneo, 4,455,636, Cl. 369-72.000.
Unibios S.p.A.: *See—*
Chiodoni, Ugo, 4,455,432, Cl. 548-501.000.
Union Camp Corporation: *See—*
Mitchell, Peter W. D., 4,454,987, Cl. 239-6.000.
Union Carbide Corporation: *See—*
Fuhrhop, Ronald E., 4,455,176, Cl. 148-9.00R.
Singer, Leonard S., 4,455,527, Cl. 324-316.000.
Waldrum, John E., 4,454,988, Cl. 239-118.000.
Warner, Glenn H.; Bhasin, Madan M.; and Lieberman, Bernard, 4,455,392, Cl. 502-347.000.
Union Oil Company of California: *See—*
Robinson, Paul R.; and Moorehead, Eric L., 4,455,388, Cl. 502-209.000.
Ting, Pauline B.; and Simpson, Howard D., 4,455,390, Cl. 502-314.000.
Watanabe, David J., 4,454,914, Cl. 166-244.00C.
Unishear Mixers Limited: *See—*
Platts, Stanley A., 4,455,092, Cl. 366-305.000.
United Conveyor Corporation: *See—*
Jackson, Carroll V.; and Avery, Hazelton H., 4,455,111, Cl. 406-56.000.
U.S. Industries, Inc.: *See—*
Silver, Bernard R., 4,454,650, Cl. 29-818.000.
United States of America
Agriculture: *See—*
Dale, Jim E., 4,454,680, Cl. 47-1.500.
Air Force: *See—*
Miller, Daniel G., 4,455,526, Cl. 323-282.000.
Army: *See—*
Beck, Peter M., 4,454,815, Cl. 102-206.000.
Gilvydis, Jaunutis B., 4,454,799, Cl. 89-47.000.
Matta, Joseph E.; and Harris, Jeffrey L., 4,454,751, Cl. 73-56.000.
San Giovanni, Ronald D., 4,455,631, Cl. 367-136.000.
Energy: *See—*
Blasiole, George A., 4,455,154, Cl. 48-77.000.
Day, Delbert E.; and Wilder, James A., Jr., 4,455,384, Cl. 501-15.000.
Deveney, Joseph E.; and Sanderson, Stephen N., 4,454,934, Cl. 188-171.000.
Goodman, Ronald K.; and Hunt, Angus L., 4,455,276, Cl. 376-152.000.
Schlitt, Leland G., 4,455,277, Cl. 376-103.000.
Young, John E.; and Jalan, Vinod M., 4,455,286, Cl. 423-230.000.
National Aeronautics and Space Administration: *See—*
Gregory, Don A.; and Stocks, Charles D., 4,455,532, Cl. 324-457.000.
Jalan, Vinod; Reid, Margaret A.; and Charleston, Jo Ann, 4,454,649, Cl. 29-623.500.
Lauver, Richard W., 4,455,418, Cl. 528-322.000.
Riggs, Kenneth E.; and Wojciechowski, Carl J., 4,454,753, Cl. 73-117.100.
Tschirch, Richard P.; Sidman, Kenneth R.; and Arons, Irving J., 4,454,611, Cl. 2-161.00R.
Villarreal, Salvador; Lenett, Stuart D.; Kobayashi, Herbert S.; and Pawlowski, James F., 4,455,680, Cl. 455-208.000.
Navy: *See—*
Malden, Ancile E., 4,455,572, Cl. 358-160.000.
Shea, John W.; and Pater, Larry L., 4,454,798, Cl. 89-14.00B.
Walsh, Peter J.; and Bottka, Nicholas, 4,454,835, Cl. 118-712.000.
U.S. Philips Corporation: *See—*
Braat, Josephus J. M., 4,455,632, Cl. 369-45.000.
Le Gars, Jacques; Losset, Martine; and Remery, Michel, 4,455,653, Cl. 371-20.000.
Loonen, Antonie R. M., 4,455,630, Cl. 367-103.000.
Sluijterman, Albertus A. S.; and Vink, Nicolaas G., 4,455,542, Cl. 335-213.000.
van der Meulen, Andries, 4,455,652, Cl. 371-16.000.
Van Hoof, Isidoor K.; and van den Bergh, Johannes H. P. M., 4,455,481, Cl. 219-522.000.
van Roermund, Arthur H. M., 4,455,666, Cl. 377-58.000.
Vos, Jan, 4,454,779, Cl. 74-60.000.
Wesselink, Gustaaf A., 4,455,508, Cl. 315-62.000.
United States Steel Corporation: *See—*
Brownell, George L.; Collier, Melba; Hall, William E.; Morgan, Howard H., Jr.; and Snyder, Arthur R., 4,455,446, Cl. 585-850.000.
United Technologies Corporation: *See—*
Arrigoni, John P., 4,454,656, Cl. 33-174.00C.
Neal, James W.; and Loersch, Joseph F., 4,454,740, Cl. 72-53.000.
Schwarzmann, Russell A.; and Lillibridge, Herbert J., 4,455,122, Cl. 416-190.000.
University of California, The Regents of the: *See—*
Urist, Marshall R., 4,455,256, Cl. 260-112.00R.
University of Maine, The Board of Trustees of the: *See—*
Smith, Norman; and Riley, John G., 4,454,827, Cl. 110-234.000.
University of Minnesota, The Regents of the: *See—*
Case, Steven K., 4,455,061, Cl. 350-3.750.
University of Pittsburgh: *See—*
Mears, Dana C., 4,454,876, Cl. 128-92.00D.
Uop Inc.: *See—*
Kulprathipanja, Santi; and Neuzil, Richard W., 4,455,444, Cl. 585-826.000.
Neuzil, Richard W.; and Kulprathipanja, Santi, 4,455,445, Cl. 585-820.000.
Upjohn Company, The: *See—*
Hester, Jackson B., Jr., 4,455,307, Cl. 424-246.000.
Johnson, Roy A., 4,455,427, Cl. 546-269.000.
Kelly, Robert C.; and Wierenga, Wendell, 4,455,430, Cl. 548-243.000.
Uram, Robert: *See—*
Martz, Lyle F.; Kiscaden, Roy W.; and Uram, Robert, 4,455,614, Cl. 364-494.000.
Uranit GmbH: *See—*
Sartor, Bruno; Jager, Werner; Ebinger, Horst; Luthardt, Gunther; and Bergmann, Walter, 4,455,207, Cl. 204-192.00E.
Urata, Yukihide; Kasama, Yasuo; Moriuchi, Shigenori; and Okutsu, Eiichi, to Fuji Photo Film Co., Ltd. Silver halide photographic material for photomechanical process and reduction processing method thereof. 4,455,365, Cl. 430-309.000.
Urban Transportation Development Corporation Ltd.: *See—*
Becker, Heinz W.; Whitfield, Fred S.; and Chadwick, Dennis P., 4,455,033, Cl. 280-403.000.
Urdea, Myron G. Convertible melting furnace. 4,455,016, Cl. 266-156.000.

Urist, Marshall R., to University of California, The Regents of the. Bone morphogenetic protein. 4,455,256, Cl. 260-112.00R.

Ursel, Eckhard: *See—*
Schmidt, Lothar; Siebicke, Horst; and Ursel, Eckhard, 4,454,626, Cl. 15-250.160.

Usaty, Jury P.: *See—*
Filippov, Vladimir I.; Parshin, Nikolai I.; Barabanov, Igor V.; Marmer, Eduard N.; Puzanov, Alexandr F.; Lobanov, Alexandr B.; Usaty, Jury P.; Gerasimov, Vladimir I.; Tikhonov, Arkady K.; and Turulin, Viktor N., 4,455,177, Cl. 148-155.000.

Usenko, Jury D.: *See—*
Portnyagina, Vera A.; Karp, Valentina K.; Barkova, Irina S.; Trinus, Fedor P.; Mokhort, Nikolai A.; Fadeicheva, Alexandra G.; Kozhushko, Galina I.; Ryabukha, Tatyana K.; Panteleimonov, Alexandr G.; Kljushin, Viktor V.; Dobrovolsky, Jury N.; Kirichek, Larisa M.; Medvedovsky, Adolf A.; Getman, Galina A.; Usenko, Jury D.; Sidelnikov, Viktor M.; Danilevsky, Nikolai F.; and Solsky, Yakov P., 4,455,312, Cl. 424-251.000.

Usikubo, Masao: *See—*
Shinohara, Toshio; and Usikubo, Masao, 4,455,280, Cl. 422-63.000.

Usui, Kenji: *See—*
Suzuki, Yoshitsugu; Iizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, 4,454,652, Cl. 29-863.000.

Uzuka, Mitsuo, to Sony Corporation. Control circuit of brushless DC motor. 4,455,515, Cl. 318-254.000.

Vadetec Corporation: *See—*
Kemper, Yves J., 4,454,782, Cl. 74-191.000.

Valent, James A.: *See—*
Colglazier, Donald F.; Janssen, Donovan M.; Mantey, John P.; and Valent, James A., 4,455,018, Cl. 271-227.000.

Valiant, Dimitri. Ketchup bottle support. 4,454,897, Cl. 141-364.000.

van den Bergh, Johannes H. P. M.: *See—*
Van Hoof, Isidoor K.; and van den Bergh, Johannes H. P. M., 4,455,481, Cl. 219-522.000.

Vanderkooi, Nicholas, Jr.; Stevenson, Philip E.; and Welgos, Robert J., to Allied Corporation. Process to form amorphous, crystallizable thermoplastic polymers. 4,455,417, Cl. 528-272.000.

Vandermer, Barbara B. Scouring pad holder. 4,454,624, Cl. 15-209.00D.

van der Meulen, Andries, to U.S. Philips Corporation. Appliance comprising a digital programming device which is protected against malfunctioning due to uncontrolled switch-on phenomena. 4,455,652, Cl. 371-16.000.

van der Sloot, Bart; and Epema, Sijtse, to Tebel Machinefabricken B.V. Vehicle door construction. 4,454,685, Cl. 49-110.000.

Van Hoof, Isidoor K.; and van den Bergh, Johannes H. P. M., to U.S. Philips Corporation. Window pane with embedded therein an electrical heating wire. 4,455,481, Cl. 219-522.000.

van Nederveen, Hans B.; and Verburgh, Martin B., to SKF Industrial Trading & Development Company, B.V. Method for producing an object on which an exterior layer is applied by thermal spraying and object, in particular a drill bit, obtained pursuant to this method. 4,455,278, Cl. 419-6.000.

van Roermund, Arthur H. M., to U.S. Philips Corporation. Compensation of 1st order transfer inefficiency effect in a C.T.D. 4,455,666, Cl. 377-58.000.

Van Uitert, LeGrand G.: *See—*
Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; Zuber, John R.; and Zydzik, George J., 4,455,351, Cl. 428-450.000.

Van Zandt, Hillard C.: *See—*
Ellis, Jim E., 4,454,655, Cl. 33-141.00G.

Varian Associates, Inc.: *See—*
Brown, Karl L., 4,455,489, Cl. 250-398.000.

Varon, David S.; and Dorner, Steven C., to Crown Metal Manufacturing. Hang rail support and hang rail. 4,455,007, Cl. 248-251.000.

Vasseur, Jean-Pierre: *See—*
Guillemin, Claude; Lissot, Jean; and Vasseur, Jean-Pierre, 4,454,749, Cl. 73-23.100.

VDO Adolf Schindling AG: *See—*
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Veb Kombinat Polygraph "Werner Lamberz" Leipzig: *See—*
Drehobl, Claus, 4,455,518, Cl. 318-632.000.
Johne, Hans; Schmidt, Lothar; and Jentzsch, Arndt, 4,454,812, Cl. 101-212.000.

VEB Kombinat Textima: *See—*
Krauss, Theo; Herrmann, Ludwig; and Minde, Siegfried, 4,454,668, Cl. 38-11.000.

Vendo Company, The: *See—*
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Verburg, Werner: *See—*
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Verburgh, Martin B.: *See—*
van Nederveen, Hans B.; and Verburgh, Martin B., 4,455,278, Cl. 419-6.000.

Verreet, Roland, to Drahtsteilwerk Saar GmbH. Wire rope and method of making same. 4,454,708, Cl. 57-215.000.

Verrier, Arthur N.: *See—*
Jones, Harold A.; Teixeira, Manuel G.; and Verrier, Arthur N., 4,454,997, Cl. 242-47.010.

VFW: *See—*
Hilbig, Reinhard, 4,455,003, Cl. 244-35.00R.

Vibro-Meter SA: *See—*
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Victor Company of Japan, Ltd.: *See—*
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Ohno, Hirotoshi, 4,455,514, Cl. 318-254.000.
Sano, Shoji, 4,455,674, Cl. 381-15.000.
Shimizu, Kyoichi; Sato, Kiyoshi; and Takahaski, Tadashi, 4,455,571, Cl. 358-138.000.

Villarreal, Salvador; Lenett, Stuart D.; Kobayashi, Herbert S.; and Pawlowski, James F., to United States of America, National Aeronautics and Space Administration. Method and apparatus for receiving and tracking phase modulated signals. 4,455,680, Cl. 455-208.000.

Vincent, Floyd. Collapsible burner support apparatus. 4,454,859, Cl. 126-38.000.

Vines, Harvey L.; Alvarez, Miguel R.; Rowles, Howard C.; and Woodward, Donald W., to Air Products and Chemicals, Inc. Nitrogen rejection process incorporating a serpentine heat exchanger. 4,455,158, Cl. 62-28.000.

Vink, Nicolaas G.: *See—*
Sluijterman, Albertus A. S.; and Vink, Nicolaas G., 4,455,542, Cl. 335-213.000.

Vladimirov, Pavel S.: *See—*
Sizyakov, Viktor M.; Kaluzhsky, Nikolai A.; Badaiants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Isakov, Evgeny A.; Alexandrova, Zarya N.; Afanasiev, Valentin N.; Chernov, Vinetsy I.; Zhukov, Alexandr G.; Kutsenko, Viktor S.; Vysotskaya, Galina M.; Ostrovlyanchik, Evgenia S.; Mironov, Evgeny I.; Vladimirov, Pavel S.; Alexeev, Alexei I.; Finkelshtein, Leonid I., deceased; Finkelshtein, Nina J., administrator; and Finkelshtein, Julia L., administrator, 4,455,284, Cl. 423-119.000.

Vlemmings, Jan: *See—*
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Volker, Herbert: *See—*
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Volkswagenwerk Aktiengesellschaft: *See—*
Kaspar, Lothar; and Seiffert, Ulrich, 4,454,789, Cl. 74-850.000.
Leunig, Ernst, 4,454,755, Cl. 73-118.000.

Volvo Flygmotor AB: *See—*
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von Blucher, Hasso: *See—*
von Blucher, Hubert; von Blucher, Hasso; and de Ruiter, Ernst, 4,455,187, Cl. 156-277.000.

von Blucher, Hubert; von Blucher, Hasso; and de Ruiter, Ernst. Filter sheet material and method of making same. 4,455,187, Cl. 156-277.000.

von Rintelen, Harald: *See—*
Patzold, Walter; Verburg, Werner; and von Rintelen, Harald, 4,455,359, Cl. 430-10.000.

von Sichart, Frithjof: *See—*
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Vorwerk & Co. Interholding GmbH: *See—*
Simm, Hans-Peter; Guhne, Wieland; Hoesch, Christoph; and Friedrichs, Renate, 4,454,627, Cl. 15-377.000.

Vos, Jan, to U.S. Philips Corporation. Drive for a variable-stroke swash plate mechanism. 4,454,779, Cl. 74-60.000.

Vsesojuzny Nauchnoissledovatelsky I Proektny Institut Aljuminievoi, Magnievoi I Elektrodnoi Promyshiennosti: *See—*
Sizyakov, Viktor M.; Kaluzhsky, Nikolai A.; Badaiants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Isakov, Evgeny A.; Alexandrova, Zarya N.; Afanasiev, Valentin N.; Chernov, Vinetsy I.; Zhukov, Alexandr G.; Kutsenko, Viktor S.; Vysotskaya, Galina M.; Ostrovlyanchik, Evgenia S.; Mironov, Evgeny I.; Vladimirov, Pavel S.; Alexeev, Alexei I.; Finkelshtein, Leonid I., deceased; Finkelshtein, Nina J., administrator; and Finkelshtein, Julia L., administrator, 4,455,284, Cl. 423-119.000.

Vukasovic, Lovro, to Siemens Aktiengesellschaft. Thyristor matrix having at least four columns. 4,455,597, Cl. 363-68.000.

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Brown, Donald P.; Jones, Ian R.; and Vurpillat, Victor V., 4,454,863, Cl. 126-432.000.

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W. C. Heraeus GmbH: *See—*
Aldinger, Fritz; Heinke, Harry; Schreiber, Franz; and Werdecker, Waltraud, 4,454,977, Cl. 228-131.000.

W. Haking Enterprises Limited: *See—*
Wong, Wan C.; and Oshima, Shigeru, 4,455,074, Cl. 354-173.100.

Wada, Hiroto: *See—*
Tanaka, Masamichi; and Wada, Hiroto, 4,455,494, Cl. 307-400.000.

Wade, Philip M.; and Williams, Robert T., to David Brown Tractors Ltd. Reservoir for a vehicle power steering system. 4,454,717, Cl. 60-453.000.

Wahl, Ralph E., to General Electric Company. Method of forming concentric cable layer and article formed. 4,454,709, Cl. 57-223.000.

Walden, Jack M.; Eads, William D.; Cozzens, Ray J.; Bidwell, John L.; Jewett, Robert A.; Wilson, Martin S.; Griffin, Daniel J.; Kuseski, Robert E.; and Schulte, Louis T., to Hewlett-Packard Company. Programmable calculator. 4,455,618, Cl. 364-900.000.

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Watson, Robert E.; Walden, Jack M.; and Near, Charles W., 4,455,607, Cl. 364-200.000.

Waldrum, John E., to Union Carbide Corporation. Self-cleaning nozzle. 4,454,988, Cl. 239-118.000.

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Sharp, Harper E.; Spiegel, Leo; Masters, Richard M.; Howatt, John R.; and Walker, Gary E., 4,454,756, Cl. 73-151.000.

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Walker, James J., Jr.: *See*—
Haas, Rudy E.; Smorol, Michael E.; Tobin, Curtis L.; and Walker, James J., Jr., 4,454,641, Cl. 29-157.30R.

Wallace, Donald G.; Schneider, Phillip M.; and Lundblad, John L., to Cutter Laboratories, Inc. Fibronectin compositions. 4,455,300, Cl. 424-101.000.

Wallach, Steven J.: *See*—
Ahlstrom, John K.; Bachman, Brett; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr; and Well, Douglas M., 4,455,604, Cl. 364-200.000.

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Walsh, Peter J.; and Bottka, Nicholas, to United States of America, Navy. Internal photolysis reactor. 4,454,835, Cl. 118-712.000.

Walter, Fred A. Anchoring of material to concrete. 4,454,701, Cl. 52-704.000.

Walton, David W.: *See*—
Topping, Douglas R. P.; Walton, David W.; and Sage, Leslie R., 4,455,673, Cl. 381-12.000.

Wanish, Paul J.: *See*—
Cormier, Roger L.; Dugan, Robert J.; Guyette, Richard R.; Wanish, Paul J.; and Zeitler, Carl, Jr., 4,455,605, Cl. 364-200.000.

Ward, Kenneth C.; and Welburn, Ross, to Compumotor Corporation. Method and means for stable operation of a synchronous motor. 4,455,520, Cl. 318-696.000.

Warden, Hans, to Siemens Aktiengesellschaft. X-Ray examination apparatus. 4,455,668, Cl. 378-021.000.

Warner, Charles E.; and Schroder, William J., to Milliken Research Corporation. Balloon control for yarn texturing machine. 4,454,710, Cl. 57-354.000.

Warner, Glenn H.; Bhasin, Madan M.; and Lieberman, Bernard, to Union Carbide Corporation. Process for preparing a supported silver catalyst. 4,455,392, Cl. 502-347.000.

Warner-Lambert Company: *See*—
Chen, Evan N., 4,454,653, Cl. 30-53.000.

Washington Research Foundation: *See*—
Mahler, George D., 4,454,763, Cl. 73-639.000.

Watanabe, David J., to Union Oil Company of California. Method for conditioning geothermal brine to reduce scale formation. 4,454,914, Cl. 166-244.00C.

Watanabe, Hideo: *See*—
Syukuda, Yukio; Watanabe, Hideo; and Matsuyama, Shigeo, 4,455,297, Cl. 424-92.000.

Watanabe, Hiroo, to Nissan Motor Co., Ltd. Vehicle seat having an adjustable femur supporter. 4,455,047, Cl. 297-284.000.

Watanabe, Kiyoshi: *See*—
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Watanabe, Masakatu; Hamada, Yukinori; and Chiwaki, Ryuichi, to Omron Tateisi Electronics Co. Direct memory access control apparatus. 4,455,620, Cl. 364-900.000.

Watanabe, Takeshi: *See*—
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Watanabe, Tetsuro: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,455,163, Cl. 71-86.000.

Watanabe, Toshiaki: *See*—
Imazu, Katsuhiro; and Watanabe, Toshiaki, 4,454,960, Cl. 220-456.000.

Watanabe, Yoshitaka: *See*—
Iwashita, Tomonori; Watanabe, Yoshitaka; and Fukahori, Hidehiko, 4,455,075, Cl. 354-173.100.

Watkins, David W.; Wheatley, Peter C.; and Kaye, William G. Heat treatment of material. 4,455,285, Cl. 423-171.000.

Watkins-Johnson Company: *See*—
Bertolina, Robert W., 4,455,448, Cl. 174-35.00R.

Watkins, Michael D.: *See*—
Ecuer, John H.; and Watkins, Michael D., 4,454,747, Cl. 73-1.00H.

Watson, Robert E.; Walden, Jack M.; and Near, Charles W., to Hewlett-Packard Company. Programmable calculator having keys for performing angular measurement unit conversion. 4,455,607, Cl. 364-200.000.

Watteredge-Uniflex, Inc.: *See*—
Kasper, James J.; Bosch, George E.; and Smith, Craig A., 4,455,659, Cl. 373-39.000.

Watts, Daniel J.: *See*—
Hoftiezer, Henry W.; Watts, Daniel J.; and Takahashi, Akio, 4,455,257, Cl. 260-124.00R.

Wawra, Gerhard: *See*—
Frohlich, Johann L.; Gamperl, Josef; Hanak, Peter; and Wawra, Gerhard, 4,454,912, Cl. 166-53.000.

Weasel, George E., Jr. Refrigerated produce transport. 4,454,723, Cl. 62-64.000.

Webb, Karen K.: *See*—
Olson, Daniel R.; and Webb, Karen K., 4,455,205, Cl. 204-159.130.

Webb, Paul A., Jr.; Small, Alan H.; and Ball, Dean M., to Micromeritics Instrument Corporation. Chromatograph detection system. 4,455,084, Cl. 356-72.000.

Weber, Eduard: *See*—
Klein, Heinrich; Pieper, Rudolf; and Weber, Eduard, 4,454,661, Cl. 34-57.00E.

Weber, Harold J.: *See*—
Weitzen, Edward H.; D'Amato, Salvatore F.; Fleming, Robert M.; Kuehnle, Manfred R.; Ekman, C. Frederick; Kruse, Jurgen; and Weber, Harold J., 4,455,039, Cl. 283-83.000.

Weber, Hermann P., to Techsight Corporation. Method for coating items. 4,455,322, Cl. 427-8.000.

Wehr, Hubert; and Fritze, Rolf-Gunther, to Cyklop International Emil Hoffmann KG. Feed device for strapping bands. 4,454,808, Cl. 100-4.000.

Weileder, Peter: *See*—
Marquis, Robert P.; and Weileder, Peter, 4,454,734, Cl. 68-198.000.

Weinstein, Albert; Skeen, Michael A.; and Connell, John L., to Davis Instruments Corporation. Wind speed and direction measuring instrument. 4,454,757, Cl. 73-189.000.

Weisbach, Albert P., to Cardinal Manufacturing Company. Metal concrete joint form and adjustable stakes. 4,455,104, Cl. 404-50.000.

Weisman, Douglas H.: *See*—
Dworsky, Lawrence N.; Weisman, Douglas H.; and Ninh, Loi Q., 4,454,639, Cl. 29-25.350.

Weiss, Edgar: *See*—
Al-Tabaqchall, Manhal; Wesch, Ludwig; and Weiss, Edgar, 4,455,396, Cl. 521-54.000.

Weitzen, Edward H.; D'Amato, Salvatore F.; Fleming, Robert M.; Kuehnle, Manfred R.; Ekman, C. Frederick; Kruse, Jurgen; and Weber, Harold J., to Coulter Systems Corporation. Encoded security document. 4,455,039, Cl. 283-83.000.

Welburn, Ross: *See*—
Ward, Kenneth C.; and Welburn, Ross, 4,455,520, Cl. 318-696.000.

Welebir, Andrew J., to Biochemical Research Corporation. 1-Triacontanol plant growth stimulator formulations. 4,455,162, Cl. 71-80.000.

Welgos, Robert J.: *See*—
Vanderkooi, Nicholas, Jr.; Stevenson, Philip E.; and Welgos, Robert J., 4,455,417, Cl. 528-272.000.

Well, Douglas M.: *See*—
Ahlstrom, John K.; Bachman, Brett; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr; and Well, Douglas M., 4,455,604, Cl. 364-200.000.

Wellman, David. Sawbuck. 4,454,929, Cl. 182-154.000.

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Bratt, Richard G.; Katz, Lawrence H.; and Wells, Douglas M., 4,455,603, Cl. 364-200.000.

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Arnold, Dieter; Bartels, Jorg; Lenzmann, Heinrich; Jacobsen, Gunter; Wendt, Heinz; and Stoltenberg, Manfred, 4,455,439, Cl. 568-302.000.

Wendt, Roger A., to Armtec Industries, Inc. Fire detection system with IR and UV ratio detector. 4,455,487, Cl. 250-339.000.

Werdecker, Waltraud: *See*—
Aldinger, Fritz; Heinke, Harry; Schreiber, Franz; and Werdecker, Waltraud, 4,454,977, Cl. 228-131.000.

Werner-Larsen, Olaf, to Svenska Rotor Maskiner Aktiebolag. Control device in a helical screw rotor machine for regulating the capacity and the built-in volume ratio of the machine. 4,455,131, Cl. 418-201.000.

Werner & Pfleiderer: *See*—
Bamberger, Wolfgang; and Wiedmann, Werner, 4,455,091, Cl. 366-76.000.

Wesch, Ludwig: *See*—
Al-Tabaqchall, Manhal; Wesch, Ludwig; and Weiss, Edgar, 4,455,396, Cl. 521-54.000.

Wesemeyer, Jurgen; Haas, Lothar; and Haubner, Georg, to Robert Bosch GmbH. Apparatus for decreasing current consumption of microprocessors in battery-energized systems. 4,455,623, Cl. 364-900.000.

Wesselink, Gustaaf A., to U.S. Philips Corporation. Low-pressure mercury vapor discharge lamp. 4,455,508, Cl. 315-62.000.

Wesson, Sheldon P.: *See*—
Nishioka, Gary M.; and Wesson, Sheldon P., 4,455,330, Cl. 427-379.000.

West, Robert N.; and Barker, Andrew J., to Sira Institute Limited. Optical test apparatus for examining an object. 4,455,086, Cl. 356-237.000.

Western Geophysical Company of America: *See*—
Savit, Carl H.; and Shopland, Robert C., 4,455,500, Cl. 310-312.000.

Westinghouse Electric Corp.: *See*—
Ecer, Gunes M.; Stol, Israel; and Lessmann, Gerald G., 4,455,471, Cl. 219-125.120.
Engel, Joseph C.; Hanson, Richard E.; Simms, Kenneth W.; and Spreadbury, Robert J., 4,455,595, Cl. 362-265.000.
Isenberg, Arnold O., 4,455,214, Cl. 204-428.000.

Lee, Pang-Kai; Hickam, William M.; and Lindsay, William T., Jr., 4,455,530, Cl. 324-446.000.
Martz, Lyle F.; Kiscaden, Roy W.; and Uram, Robert, 4,455,614, Cl. 364-494.000.
Rieben, Stuart L., 4,454,790, Cl. 81-57.380.

Westland plc: *See*—
Sanders, Roy; and Redstone, Michael J., 4,455,123, Cl. 416-134.00A.

Westlin, Karl L.: *See*—
Wooldridge, James E.; and Westlin, Karl L., 4,455,155, Cl. 55-13.000.

Westvaco Corporation: *See*—
Noble, John W., 4,455,263, Cl. 260-503.000.

Wheatley, Peter C.: *See*—
Watkins, David W.; Wheatley, Peter C.; and Kaye, William G., 4,455,285, Cl. 423-171.000.

Wheeler, Gary O. Means for maintaining attached flow of a flowing medium. 4,455,045, Cl. 296-1.00S.

Whitaker, Robert H., Sr., to Lockheed Corporation. Flight control device for airplanes. 4,455,004, Cl. 244-90.00R.

White, Albert H.: *See*—
Zagranski, Raymond D.; and White, Albert H., 4,454,754, Cl. 73-117.300.

White, Charles J. Method and means of securing a plant pot to a shelf. 4,454,681, Cl. 47-39.000.

Whitehead, Edwin N. Identification card which is magnetically coded to prevent counterfeiting. 4,455,484, Cl. 235-493.000.

Whitfield, Fred S.: *See*—
Becker, Heinz W.; Whitfield, Fred S.; and Chadwick, Dennis P., 4,455,033, Cl. 280-403.000.

Whitman Medical Corporation: *See*—
Gordon, Marvin; Lichtenstein, Joseph; and Kocanowski, Stephen, 4,455,139, Cl. 604-247.000.

Whitney, John, to Medisearch PR, Inc. Air pad with integral securement straps. 4,454,615, Cl. 5-449.000.

Wiedmann, Werner: *See*—
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Wienand, Henning; Ostertag, Werner; and Bittler, Knut, to BASF Aktiengesellschaft. Yellow pigment containing bismuth vanadate and having the composition $BiVO_4 . xBi_2MoO_6 . yBi_2WO_6$. 4,455,174, Cl. 156-288.00B.

Wierenga, Wendell: *See*—
Kelly, Robert C.; and Wierenga, Wendell, 4,455,430, Cl. 548-243.000.

Wiesner, Paul E.: *See*—
Stoller, David A., Sr.; Culler, William B.; and Wiesner, Paul E., 4,454,823, Cl. 105-423.000.

Wiggins Teape Group Limited, The: *See*—
Roberts, Brian S., 4,455,090, Cl. 356-448.000.

Wilcock, Donald F.: *See*—
Pinkus, Oscar; and Wilcock, Donald F., 4,455,026, Cl. 277-1.000.

Wilder, James A., Jr.: *See*—
Day, Delbert E.; and Wilder, James A., Jr., 4,455,384, Cl. 501-15.000.

Wile, Donald T. Dual threshold wide band/narrow band AGC. 4,455,681, Cl. 455-243.000.

Wilken, Kent D.: *See*—
Galen, Peter M.; and Wilken, Kent D., 4,455,655, Cl. 371-38.000.

William H. Byler Revocable Trust: *See*—
Byler, William H., 4,454,869, Cl. 128-69.000.

Williams, Albert J., Jr.; and Machler, Raymond C. Combined analog digital symbols. 4,455,558, Cl. 346-1.100.

Williams, Frank J., III; and Dellacoletta, Brent A., to General Electric Company. Method for making bis-etherphthalimides. 4,455,431, Cl. 548-461.000.

Williams, Robert T.: *See*—
Wade, Philip M.; and Williams, Robert T., 4,454,717, Cl. 60-453.000.

Williamson, Warren L.: *See*—
Fathauer, George H.; and Williamson, Warren L., 4,455,679, Cl. 455-165.000.

Willis, W. Coy, to Aluminum Company of America. Ball housing for a nonrefillable pour fitment. 4,454,954, Cl. 215-21.000.

Wilson, Dallas W. Switch actuating mechanism. 4,455,466, Cl. 200-86.500.

Wilson Industries, Inc.: *See*—
Sharp, Harper E.; Spiegel, Leo; Masters, Richard M.; Howatt, John R.; and Walker, Gary E., 4,454,756, Cl. 73-151.000.

Wilson, Martin S.: *See*—
Walden, Jack M.; Eads, William D.; Cozzens, Ray J.; Bidwell, John L.; Jewett, Robert A.; Wilson, Martin S.; Griffin, Daniel J.; Kuseski, Robert E.; and Schulte, Louis T., 4,455,618, Cl. 364-900.000.

Wilson, Robert M., to RCA Corporation. RF Radial choke for use in record playback apparatus. 4,455,638, Cl. 369-126.000.

Windeler, Christopher L.; DeVore, Henry S.; Seal, David B.; and Budzyn, Boleslaw L., to Allied Corporation. Combination ribbon string-up and winder apparatus. 4,454,996, Cl. 242-25.00R.

Wirt, Leon A.: *See*—
Muller, Thomas P.; and Wirt, Leon A., 4,454,715, Cl. 60-421.000.

Wirth Maschinen-und Bohrgerate-Fabrik GmbH: *See*—
Tibussek, Fritz, 4,454,923, Cl. 175-363.000.

Wise, Stanley S. Emergency and parking brake arrangement in vehicle braking system. 4,454,936, Cl. 192-4.00A.

Wissinger, Waldemar: *See*—
Budich, Wolfgang; Gasper, Bertram; Kurth, Josef; Scharf, Karl-Gunter; and Wissinger, Waldemar, 4,455,398, Cl. 523-220.000.

Withers, Stanley J.: *See*—
Downie, David E.; Schneiderman, Gary; Shulse, Eric D.; and Withers, Stanley J., 4,454,643, Cl. 29-270.000.

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Riggs, Kenneth E.; and Wojciechowski, Carl J., 4,454,753, Cl. 73-117.100.

Wolf, Fred G.; and Schneider, William C., to Alco Foodservice Equipment Company. Toaster. 4,454,803, Cl. 99-329.0RT.

Wolfe, Paul B.: *See*—
Born, Ellis H.; Meisel, William H.; and Wolfe, Paul B., 4,455,124, Cl. 417-218.000.

Wolff, Gunter: *See*—
Dworak, Wilhelm; Mayer, Siegfried; Muller, Karl-Heinz; Talmon, Wolfgang; and Wolff, Gunter, 4,455,130, Cl. 418-132.000.

Wolstenholme, Paul P. Storage system for granular materials. 4,454,807, Cl. 99-646.00S.

Wondowski, Raymond S.: *See*—
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Wong, Joe: *See*—
Lifshin, Eric; Cargioli, Joseph D.; Schroder, Stephen J.; and Wong, Joe, 4,455,181, Cl. 156-150.000.

Wong, Wan C.; and Oshima, Shigeru, to W. Haking Enterprises Limited. Automatic film rewinding camera. 4,455,074, Cl. 354-173.100.

Wood, Donald L., to Shell Oil Company. Antifreeze compositions. 4,455,248, Cl. 252-75.000.

Wood, Gary J. Beach locker. 4,454,824, Cl. 109-52.000.

Wood, Van E.; and Kenan, Richard P., to Canon Kabushiki Kaisha. Luneburg lens for waveguide with graded index profile. 4,455,063, Cl. 350-96.120.

Wood, William G.; and Pilznienski, John F., to Kolene Corporation. Aqueous solution of alkali metal compositions. 4,455,251, Cl. 252-156.000.

Woodruff, Harold F. Cable dispensing device and method. 4,454,999, Cl. 242-86.50R.

Woodruff, Steven D.: *See*—
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Woods, William E.: *See*—
Cushing, David E.; Lemay, Richard A.; Stanley, Philip E.; and Woods, William E., 4,455,606, Cl. 364-200.000.

Woodward, Donald W.: *See*—
Vines, Harvey L.; Alvarez, Miguel R.; Rowles, Howard C.; and Woodward, Donald W., 4,455,158, Cl. 62-28.000.

Wooldridge, James E.; and Westlin, Karl L., to Allis-Chalmers Corp. Electrostatic collecting assembly. 4,455,155, Cl. 55-13.000.

Wright, Donald, to Don Wright Golf Company. Master shaft and method of making golf club shafts therefrom. 4,455,022, Cl. 273-77.00A.

Wu, Shy-Hsien, to Corning Glass Works. Organic-inorganic composites of neutralized polyelectrolyte complexes. 4,455,382, Cl. 501-2.000.

Wunsche, Edgar R., to Empco (Canada) Ltd. Forced cooling panel for lining a metallurgical furnace. 4,455,017, Cl. 266-190.000.

Wurzburg, Henry, to Motorola, Inc. Switched capacitor all pass filter. 4,455,539, Cl. 333-173.000.

Wylegala, Kenneth B.; Fischer, James R.; Long, Franklin A.; and Golob, Deborah L., to Norac Company, Inc., The. Phlegmatization of organic peroxides by metallic soaps. 4,455,252, Cl. 252-186.260.

Xenell Corporation: *See*—
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Xerox Corporation: *See*—
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Yabu, Takashi; and Kanazawa, Masao, to Fujitsu Limited. Method for producing a semiconductor device. 4,455,194, Cl. 156-653.000.

Yagihara, Morio: *See*—
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Naito, Hideki; Hara, Hiroshi; and Yagihara, Morio, 4,455,363, Cl. 430-203.000.

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Yajima, Seishi; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamamura, Takemi, to UBE Industries, Ltd. Process for producing an organometallic copolymer. 4,455,414, Cl. 528-30.000.

Yamada, Kouzi: *See*—
Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Suzuki, Takeshi; Kinoshita, Kensaku; Mishima, Mannen; Katoh, Yoshinori; Kobayashi, Seiichi; Murakami, Manabu; and Yamada, Kouzi, 4,455,316, Cl. 424-274.000.

Yamada, Shinjiro, to Mitsui Kinzoku Kogyo K.K. Latch device. 4,455,042, Cl. 292-201.000.

Yamagata, Tetsuya: *See*—
Noda, Kanji; Nakagawa, Akira; Yamagata, Tetsuya; Kobayasi, Masasi; Suenaga, Tadayoshi; Tokubuchi, Fumiaki; Noguchi, Kazuki; Yoshitake, Tadaaki; Tsuji, Masayoshi; and Ide, Hiroyuki, 4,455,146, Cl. 604-897.000.

Yamaguchi, Tadashi; Ono, Takayuki; Hirata, Michitoshi; and Yokoyama, Toshihiko, to Tohoku Metal Industries, Ltd.; and Taisei Corporation. Method for the preparation of magnetically traceable explosives. 4,455,179, Cl. 149-109.600.

Yamakyu Automatics Co., Ltd.: *See*—
Oizumi, Yoshio, 4,454,942, Cl. 198-424.000.
Yamamoto, Isao: *See*—
Nara, Kiyoshi; Katamoto, Kazuyoshi; Ohkido, Sadao; Yamamoto, Isao; and Yanome, Hiroshi, 4,455,306. Cl. 424-246.000.
Yamamoto, Kouichi: *See*—
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Yamamoto, Yoshihiro; and Kawakami, Hiromi, to Sony Corporation. Television sound receiver. 4,455,573, Cl. 358-198.000.
Yamamura, Takemi: *See*—
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Yamanaka, Kunio: *See*—
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Yamane, Kazumasa; Kobayashi, Masahiro; and Takada, Masahiko, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Vinyl chloride copolymer and composition containing the same. 4,455,407, Cl. 525-208.000.
Yamashita, Seichi: *See*—
Ogino, Kohzo; Shiomi, Tomikazu; Tanaka, Yuichi; and Yamashita, Seichi, 4,455,334, Cl. 428-36.000.
Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Suzuki, Takeshi; Kinoshita, Kensaku; Mishima, Mannen; Katoh, Yoshinori; Kobayashi, Seiichi; Murakami, Manabu; and Yamada, Kouzi, to Eisai Co., Ltd. Polyprenyl esters of acemethacins and anti-inflammatory method of use thereof. 4,455,316, Cl. 424-274.000.
Yanagawa, Mikio, to Casio Computer Co., Ltd. Electronic game apparatus. 4,455,024, Cl. 273-85.00G.
Yanagida, Seiichi; Takeuchi, Motohiko; and Marumoto, Hideki, to Tokyo Shibaura Denki Kabushiki Kaisha. Erase features for magnetic multi-track rerecording. 4,455,582, Cl. 360-77.000.
Yang, Long S. Clutch-brake device. 4,454,937, Cl. 192-12.00B.
Yang, Tai-Her. Extension, folding or detachable lamp shade. 4,455,594, Cl. 362-252.000.
Yano, Takashi: *See*—
Nagata, Kenichi; Nagamori, Shigeru; Katoh, Yuuichi; Satoh, Katsumi; and Yano, Takashi, 4,455,148, Cl. 44-1.0SR.
Yanome, Hiroshi: *See*—
Nara, Kiyoshi; Katamoto, Kazuyoshi; Ohkido, Sadao; Yamamoto, Isao; and Yanome, Hiroshi, 4,455,306, Cl. 424-246.000.
Yaralian, Kourken. Composition for repelling birds. 4,455,304, Cl. 424-195.000.
Yashiro, Kenji: *See*—
Saeki, Yoshifumi; and Yashiro, Kenji, 4,455,570, Cl. 358-86.000.
Yasumi, Masaoki, to Japan Aviation Electronics Industry Limited. Aperture setting device. 4,454,657, Cl. 33-180.00R.
Yazaki Corporation: *See*—
Suzuki, Yoshitsugu; Iizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, 4,454,652, Cl. 29-863.000.
Yeda Research and Development Co., Ltd.: *See*—
Shtrikman, Shmuel, 4,455,497, Cl. 310-30.000.
Yeung, Edward S.; and Woodruff, Steven D., to Iowa State University Research Foundation, Inc. Refractive index and absorption detector for liquid chromatography based on Fabry-Perot interferometry. 4,455,089, Cl. 356-352.000.
Yokohama Rubber Co., Ltd., The: *See*—
Okazaki, Yoichiro; and Akazawa, Shigeaki, 4,454,644, Cl. 29-440.000.
Yokowo, Koichi, to Toppan Containers Co., Ltd.; and Toppan Printing Co., Ltd. Collapsible partitioned corrugated cardboard container. 4,454,946, Cl. 206-600.000.
Yokoyama, Toshihiko: *See*—
Yamaguchi, Tadashi; Ono, Takayuki; Hirata, Michitoshi; and Yokoyama, Toshihiko, 4,455,179, Cl. 149-109.600.
Yoneda, Kenji: *See*—
Yoshida, Kenichi; Asano, Masaharu; and Yoneda, Kenji, 4,454,750, Cl. 73-35.000.
York, Earl D.; and Knepper, Jay C., to Standard Oil Company (Indiana); and Gulf Oil Corporation. In situ retorting of oil shale with air, steam, and recycle gas. 4,454,915, Cl. 166-259.000.
Yoshida, Keiji: *See*—
Sugiura, Masamichi; Kitagawa, Tsuneo; and Yoshida, Keiji, 4,455,080, Cl. 355-14.0SH.
Yoshida, Kenichi; Asano, Masaharu; and Yoneda, Kenji, to Nissan Motor Co., Ltd. Apparatus for generating a knock signal for use with an internal combustion engine. 4,454,750, Cl. 73-35.000.
Yoshida Kogyo K.K.: *See*—
Fukuroi, Akio, 4,454,733, Cl. 68-198.000.
Yoshida, Masahiro: *See*—
Terai, Shiro; Sato, Shiro; Kato, Sakae; Imai, Masaya; Inumaru, Susumu; and Yoshida, Masahiro, 4,454,748, Cl. 73-19.000.
Yoshida, Tetsuo; Ujihara, Motohiro; Watanabe, Takeshi; and Takagi, Akira, to Fuji Photo Film Co., Ltd. Dual surface film coating of running web. 4,455,327, Cl. 427-131.000.
Yoshimura, Shigeru; and Shimizu, Katsuichi, to Canon Kabushiki Kaisha. Recording device for recording the image of an original. 4,455,081, Cl. 355-14.0SH.
Yoshino, Tsunehiro: *See*—
Sasaki, Ken; Matsuyama, Sigeru; Yoshino, Tsunehiro; and Miyazaki, Katuhiro, 4,455,185, Cl. 156-250.000.
Yoshitake, Tadaaki: *See*—
Noda, Kanji; Nakagawa, Akira; Yamagata, Tetsuya; Kobayasi, Masasi; Suenaga, Tadayoshi; Tokubuchi, Fumiaki; Noguchi, Kazuki; Yoshitake, Tadaaki; Tsuji, Masayoshi; and Ide, Hiroyuki, 4,455,146, Cl. 604-897.000.
Young, John E.; and Jalan, Vinod M., to United States of America, Energy. High-temperature sorbent method for removal of sulfur containing gases from gaseous mixtures. 4,455,286, Cl. 423-230.000.
Zagranski, Raymond D.; and White, Albert H., to Chandler Evans, Inc. Engine failure detector. 4,454,754, Cl. 73-117.300.
Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; Umezawa, Sumio; Ishido, Yoshiharu; and Fukatsu, Shunzo, 4,455,419, Cl. 536-13.800.
Zatorski, Raymond A.: *See*—
Klein, John F.; Bhansali, Chandra K.; Fox, Thomas J.; Smyth, Richard T.; and Zatorski, Raymond A., 4,455,470, Cl. 219-121.0PP.
Zatulovsky, Isaak A.: *See*—
Sizyakov, Viktor M.; Kaluzhsky, Nikolai A.; Badaiants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Isakov, Evgeny A.; Alexandrova, Zarya N.; Afanasiev, Valentin N.; Chernov, Vinetsy I.; Zhukov, Alexandr G.; Kutsenko, Viktor S.; Vysotskaya, Galina M.; Ostrovlyanchik, Evgenia S.; Mironov, Evgeny I.; Vladimirov, Pavel S.; Alexeev, Alexei I.; Finkelshtein, Leonid I., deceased; Finkelshtein, Nina J., administrator; and Finkelshtein, Julia L., administrator, 4,455,284, Cl. 423-119.000.
Zaugg, Paul: *See*—
Hurlimann, Reinhard; and Zaugg, Paul, 4,454,721, Cl. 60-659.000.
Zeitler, Carl, Jr.: *See*—
Cormier, Roger L.; Dugan, Robert J.; Guyette, Richard R.; Wanish, Paul J.; and Zeitler, Carl, Jr., 4,455,605, Cl. 364-200.000.
Zempel, Allen M. System for burning bio-mass pellets. 4,454,828, Cl. 110-248.000.
Zhukov, Alexandr G.: *See*—
Sizyakov, Viktor M.; Kaluzhsky, Nikolai A.; Badaiants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Isakov, Evgeny A.; Alexandrova, Zarya N.; Afanasiev, Valentin N.; Chernov, Vinetsy I.; Zhukov, Alexandr G.; Kutsenko, Viktor S.; Vysotskaya, Galina M.; Ostrovlyanchik, Evgenia S.; Mironov, Evgeny I.; Vladimirov, Pavel S.; Alexeev, Alexei I.; Finkelshtein, Leonid I., deceased; Finkelshtein, Nina J., administrator; and Finkelshtein, Julia L., administrator, 4,455,284, Cl. 423-119.000.
Zip Heaters (Aust) Pty. Limited: *See*—
Massey, Raymond D.; and Newsam, Leonard, 4,455,477, Cl. 219-328.000.
Zirps, Wilhelm: *See*—
Reick, Georg; and Zirps, Wilhelm, 4,454,982, Cl. 236-92.00R.
Zuber, John R.: *See*—
Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; Zuber, John R.; and Zydzik, George J., 4,455,351, Cl. 428-450.000.
Zudkevitch, David; Preston, David K.; and Belsky, Stephen E., to Allied Corporation. Extraction and/or extractive distillation of ethanol from aqueous solutions. 4,455,198, Cl. 203-19.000.
ZVS Vyzkumnevyvojovy ustav, koncernova ucelova organizace: *See*—
Lanicek, Josef; and Rotter, Josef, 4,454,811, Cl. 101-185.000.
Zydzik, George J.: *See*—
Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; Zuber, John R.; and Zydzik, George J., 4,455,351, Cl. 428-450.000.
Zysset, Edgar H., to General Can Company, Inc. Method for making a metallic-convenience closure. 4,455,114, Cl. 413-14.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF JUNE, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Adinolfi, Robert G.: *See—*
Neal, James W.; Loersch, Joseph F.; and Adinolfi, Robert G., Re. 31,605, Cl. 204-129.350.

Altex Scientific, Inc.: *See—*
Magnussen, Haakon T., Jr., Re. 31,608, Cl. 417-22.000.

Andrew Electronics of Northern CA, Inc.: *See—*
Christensen, Earl A., Re. 31,603, Cl. 128-33.000.

Bearden, William G.; and Howard, George C., to Standard Oil Company (Indiana). Multi-layer well screen. Re. 31,604, Cl. 166-232.000.

Beckman Instruments, Inc.: *See—*
Crosby, John B., Re. 31,606, Cl. 324-62.000.

Christensen, Earl A., to Andrew Electronics of Northern CA, Inc. Body massage apparatus. Re. 31,603, Cl. 128-33.000.

Crosby, John B., to Beckman Instruments, Inc. Digital ohmmeter with electrical continuity tester. Re. 31,606, Cl. 324-62.000.

Howard, George C.: *See—*
Bearden, William G.; and Howard, George C., Re. 31,604, Cl. 166-232.000.

Lipid Specialties, Inc.: *See—*
Sears, Barry D., Re. 31,609, Cl. 424-19.000.

Loersch, Joseph F.: *See—*
Neal, James W.; Loersch, Joseph F.; and Adinolfi, Robert G., Re. 31,605, Cl. 204-129.350.

Magnussen, Haakon T., Jr., to Altex Scientific, Inc. Fluid pump mechanism. Re. 31,608, Cl. 417-22.000.

Makinen, Pekka I., to Oy, Kemira. Coated titanium dioxide pigment and a process for the production of the same. Re. 31,602, Cl. 106-300.000.

Neal, James W.; Loersch, Joseph F.; and Adinolfi, Robert G., to United Technologies Corporation. Method and apparatus for electrochemically finishing airfoil edges. Re. 31,605, Cl. 204-129.350.

Oy, Kemira: *See—*
Makinen, Pekka I., Re. 31,602, Cl. 106-300.000.

Sears, Barry D., to Lipid Specialties, Inc. Method of preparing a controlled-release pharmaceutical preparation, and resulting composition. Re. 31,609, Cl. 424-19.000.

Shell Oil Company: *See—*
Vogel, Charles B.; and Worrell, Gene T., Re. 31,607, Cl. 367-86.000.

Standard Oil Company (Indiana): *See—*
Bearden, William G.; and Howard, George C., Re. 31,604, Cl. 166-232.000.

United Technologies Corporation: *See—*
Neal, James W.; Loersch, Joseph F.; and Adinolfi, Robert G., Re. 31,605, Cl. 204-129.350.

Vogel, Charles B.; and Worrell, Gene T., to Shell Oil Company. Circumferential acoustical detector. Re. 31,607, Cl. 367-86.000.

Worrell, Gene T.: *See—*
Vogel, Charles B.; and Worrell, Gene T., Re. 31,607, Cl. 367-86.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Henry Filters, Inc.: *See—*
McEwen, Stephen N., B1 3,935,105, Cl. 210-138.000.

Lancaster, Patrick R.; and Lancaster, William G., to Lantech Inc. Film web drive stretch wrapping apparatus and process. B1 4,302,920, 6-19-84, Cl. 53-399.000.

Lancaster, William G.: *See—*
Lancaster, Patrick R.; and Lancaster, William G., B1 4,302,920, Cl. 53-399.000.

Lantech Inc.: *See—*
Lancaster, Patrick R.; and Lancaster, William G., B1 4,302,920, Cl. 53-399.000.

McEwen, Stephen N., to Henry Filters, Inc. Tubular filter in settler. B1 3,935,105, 6-19-84, Cl. 210-138.000.

LIST OF DESIGN PATENTEES

Aaccurate Counters Company: *See—*
Austin, Warren; Penny, Alex; and Aaccurate Counters Company, 274,337, Cl. D18-3.000.

Acushnet Company: *See—*
Giebel, Charles G.; and Spencer, Gary, 274,346, Cl. D21-219.000.

Albright, Edward E.: *See—*
Goodin, John W.; Albright, Edward E.; and Tamura, Amy K., 274,314, Cl. D10-40.000.

Aldrich, Thomas B., III, to Helene Curtis Industries, Inc. Bottle. 274,309, 6-19-84, Cl. D9-403.000.

American Home Products Corporation: *See—*
Banasiak, Joseph G., 274,383, Cl. D32-45.000.

American Standard, Inc.: *See—*
Niemann, James E., 274,351, Cl. D23-28.000.

Amiet AG: *See—*
Gisiger, Urs, 274,305, Cl. D8-338.000.

Anderson, Johan Anders C., to Scandinavian Metal Products SMP. Candlestick. 274,367, 6-19-84, Cl. D26-10.000.

Arenhold, Knut. Mud flap. 274,324, 6-19-84, Cl. D12-185.000.

Austin, Warren; Penny, Alex; and Aaccurate Counters Company. Change counting machine. 274,337, 6-19-84, Cl. D18-3.000.

Balaban, David B.: *See—*
Bienwald, Wolfgang F.; and Balaban, David B., 274,325, Cl. D16-32.000.

Banasiak, Joseph G., to American Home Products Corporation. Disposable oven cleaner applicator. 274,383, 6-19-84, Cl. D32-45.000.

Bandag, Incorporated: *See—*
Roelle, Herbert J.; and Burche, John, 274,323, Cl. D12-147.000.

Bausch & Lomb Incorporated: *See—*
Huckenbeck, Claus O., 274,336, Cl. D16-132.000.

Bienwald, Wolfgang F.; and Balaban, David B., to Leviton Manufacturing Company, Inc. Switch. 274,325, 6-19-84, Cl. D16-32.000.

Blackstone Industries, Inc.: *See—*
Moreno, Jack, 274,357, Cl. D24-12.000.

Boswell, Richard L.: *See—*
Hann, Robert L.; and Boswell, Richard L., 274,376, Cl. D30-1.000.

Boudreaux, Mark D.; and Duennes, Mark D., to CPG Products Corp. Toy vehicle. 274,344, 6-19-84, Cl. D21-128.000.

Brownlee, Merrel F., Jr., to Brownlee Stepladder Extensions, Inc. Stepladder shelf extension. 274,363, 6-19-84, Cl. D25-68.000.

Brownlee, Merrel F., Jr., to Brownlee Stepladder Extensions, Inc. Stepladder top extension. 274,364, 6-19-84, Cl. D25-68.000.

Brownlee Stepladder Extensions, Inc.: *See—*
Brownlee, Merrel F., Jr., 274,363, Cl. D25-68.000.

Brownlee, Merrel F., Jr., 274,364, Cl. D25-68.000.
Budde, Donald F., to Urethane Roller Specialists, Inc. Swing seat. 274,347, 6-19-84, Cl. D21-246.000.
Bulgari, Marina, to Zoldia Anstalt. Ring. 274,318, 6-19-84, Cl. D11-27.000.
Bulgari, Marina, to Zoldia Anstalt. Ring. 274,319, 6-19-84, Cl. D11-34.000.
Burche, John: *See*—
Roelle, Herbert J.; and Burche, John, 274,323, Cl. D12-147.000.
Cable Electric Products, Inc.: *See*—
Schwartz, Frederic W., 274,369, Cl. D26-26.000.
Schwartz, Frederic W., 274,370, Cl. D26-26.000.
Cannon, Raymond E., to Imed Corporation. Cassette for controlling the flow of intravenous fluid to a patient. 274,355, 6-19-84, Cl. D24-8.000.
Carrier Corporation: *See*—
Hoyle, Walter W.; Smorol, Michael E.; Haas, Rudy E.; O'Mara, Raymond D.; and Ciarlei, Joseph A., 274,353, Cl. D23-139.000.
Caterpillar Tractor Co.: *See*—
Meisel, Thomas C., Jr.; and Gee, James E., 274,333, Cl. D15-24.000.
Chiehyi, Wang. Missile-shaped firework. 274,348, 6-19-84, Cl. D22-10.000.
Chiu, Lawrence L., to Joiner Electric Products Co. Limited. Vacuum cleaner. 274,381, 6-19-84, Cl. D32-18.000.
Christensen, James M.; and Sgarlato, Thomas E., to Sutter Biomedical, Inc. Subtalar arthroereisis implant. 274,359, 6-19-84, Cl. D24-34.000.
Christopher, Joyce: *See*—
Snyder, Carol; Mohn-Schwartz, Anita F.; and Christopher, Joyce, 274,342, Cl. D21-70.000.
Snyder, Carol; Mohn-Schwartz, Anita F.; and Christopher, Joyce, 274,345, Cl. D21-134.000.
Ciarlei, Joseph A.: *See*—
Hoyle, Walter W.; Smorol, Michael E.; Haas, Rudy E.; O'Mara, Raymond D.; and Ciarlei, Joseph A., 274,353, Cl. D23-139.000.
Cousins, Michael A.; and Lonczak, John, to Dynamic Classics, Ltd. Vacuum cleaner. 274,382, 6-19-84, Cl. D32-18.000.
CPG Products Corp.: *See*—
Boudreaux, Mark D.; and Duennes, Mark D., 274,344, Cl. D21-128.000.
Goldberg, Dale I.; and Miller, Douglas R., 274,343, Cl. D21-114.000.
Dart Industries Inc.: *See*—
Goodin, John W.; Albright, Edward E.; and Tamura, Amy K., 274,314, Cl. D10-40.000.
DeBrouse, Patricia M. Pet duster. 274,378, 6-19-84, Cl. D30-40.000.
de Graf, Bradford R. Chair. 274,294, 6-19-84, Cl. D6-49.000.
Duck Haven, Inc.: *See*—
Hann, Robert L.; and Boswell, Richard L., 274,376, Cl. D30-1.000.
Duennes, Mark D.: *See*—
Boudreaux, Mark D.; and Duennes, Mark D., 274,344, Cl. D21-128.000.
Dupont, S. T.: *See*—
Malamoud, Jean G., 274,339, Cl. D19-57.000.
Dynamic Classics, Ltd.: *See*—
Cousins, Michael A.; and Lonczak, John, 274,382, Cl. D32-18.000.
Eguchi, Yoshiaki, to Janome Sewing Machine Co. Ltd. Sewing machine. 274,334, 6-19-84, Cl. D15-70.000.
Etablissements Goepfer: *See*—
Goepfer, Georges, 274,293, Cl. D2-414.000.
F.LLI Guzzini S.p.A.: *See*—
Pozzi, Ambrogio, 274,300, Cl. D7-18.000.
Fruehauf Corporation: *See*—
Hayes, Edward J.; Miller, Frank J.; and Tylenda, Francis P., 274,321, Cl. D12-97.000.
Hayes, Edward J.; Miller, Frank J.; and Tylenda, Francis P., 274,322, Cl. D12-97.000.
Gee, James E.: *See*—
Meisel, Thomas C., Jr.; and Gee, James E., 274,333, Cl. D15-24.000.
Giebel, Charles G.; and Spencer, Gary, to Acushnet Company. Mallet style putter head. 274,346, 6-19-84, Cl. D21-219.000.
Gisiger, Urs, to Amiet AG. Combination lock for luggage or similar type article-retaining container. 274,305, 6-19-84, Cl. D8-338.000.
GKN-Stenman AB: *See*—
Widen, Bo, 274,302, Cl. D8-347.000.
Goepfer, Georges, to Etablissements Goepfer. Pivotal belt buckle. 274,293, 6-19-84, Cl. D2-414.000.
Goldberg, Dale I.; and Miller, Douglas R., to CPG Products Corp. Toy room display. 274,343, 6-19-84, Cl. D21-114.000.
Gomez, Jose L. Handheld body massager. 274,360, 6-19-84, Cl. D24-36.000.
Goodin, John W.; Albright, Edward E.; and Tamura, Amy K., to Dart Industries Inc. Electronic timing and controlling device. 274,314, 6-19-84, Cl. D10-40.000.
Gorenje Tgo, Nsol.O, Velenje: *See*—
Knez, Danijel; and Suhel, Peter, 274,358, Cl. D24-31.000.
Haas, Rudy E.: *See*—
Hoyle, Walter W.; Smorol, Michael E.; Haas, Rudy E.; O'Mara, Raymond D.; and Ciarlei, Joseph A., 274,353, Cl. D23-139.000.
Habicht, Helmut. Automobile fog lamp guard. 274,373, 6-19-84, Cl. D26-139.000.
Habicht, Helmut. Automobile fog lamp guard. 274,374, 6-19-84, Cl. D26-139.000.
Hann, Robert L.; and Boswell, Richard L., to Duck Haven, Inc. Game bird releasing box. 274,376, 6-19-84, Cl. D30-1.000.
Hannah, James T. Scoring device for games. 274,315, 6-19-84, Cl. D10-46.100.
Hans Grohe GmbH & Co.: *See*—
Haug, Andreas, 274,352, Cl. D23-57.000.
Harper, George S., to North American Philips Controls Corporation. Circuit breaker handle. 274,326, 6-19-84, Cl. D13-34.000.
Haug, Andreas, to Hans Grohe GmbH & Co. Combined side shower heads and hand shower connector. 274,352, 6-19-84, Cl. D23-57.000.
Hayes, Edward J.; Miller, Frank J.; and Tylenda, Francis P., to Fruehauf Corporation. Trailer. 274,321, 6-19-84, Cl. D12-97.000.
Hayes, Edward J.; Miller, Frank J.; and Tylenda, Francis P., to Fruehauf Corporation. Tractor trailer. 274,322, 6-19-84, Cl. D12-97.000.
Helene Curtis Industries, Inc.: *See*—
Aldrich, Thomas B., III, 274,309, Cl. D9-403.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Suzuki, Nobuhiko, 274,332, Cl. D14-106.000.
Hoyle, Walter W.; Smorol, Michael E.; Haas, Rudy E.; O'Mara, Raymond D.; and Ciarlei, Joseph A., to Carrier Corporation. Heat exchange unit. 274,353, 6-19-84, Cl. D23-139.000.
Huckenbeck, Claus O., to Bausch & Lomb Incorporated. Housing for a riflescope eyepiece and reticle. 274,336, 6-19-84, Cl. D16-132.000.
Imed Corporation: *See*—
Cannon, Raymond E., 274,355, Cl. D24-8.000.
Integral Design, Inc.: *See*—
Liptak, Richard M., 274,296, Cl. D6-140.000.
Inter-Pac Packaging Corporation: *See*—
Witte, Henry C., 274,312, Cl. D9-456.000.
Interdica S.A.: *See*—
Kanoui, Joseph, 274,301, Cl. D7-27.000.
Isotope Technologies Corporation: *See*—
Nelson, Robert E., 274,317, Cl. D10-114.000.
Janome Sewing Machine Co. Ltd.: *See*—
Eguchi, Yoshiaki, 274,334, Cl. D15-70.000.
Jenkins, Henry H. Die cutting apparatus. 274,335, 6-19-84, Cl. D15-128.000.
Joiner Electric Products Co. Limited: *See*—
Chiu, Lawrence L., 274,381, Cl. D32-18.000.
Kanoui, Joseph, to Interdica S.A. Caviar-cup. 274,301, 6-19-84, Cl. D7-27.000.
Karsch, Lee. Enclosure for telephone and the like. 274,331, 6-19-84, Cl. D14-60.000.
Kelly, Terence, to TI Reynolds Limited. Cable supported personnel carrier. 274,320, 6-19-84, Cl. D12-37.000.
Kessler, Ruth G. Combined food and beverage tray. 274,299, 6-19-84, Cl. D7-5.000.
Kim, Jin S. Cigar case. 274,310, 6-19-84, Cl. D9-431.000.
Kimberly-Clark Corporation: *See*—
Whitehead, Howard A., 274,362, Cl. D24-51.000.
Knez, Danijel; and Suhel, Peter, to Gorenje Tgo, Nsol.O, Velenje. Test-indicator tray for storing a vaginal muscle stimulation device. 274,358, 6-19-84, Cl. D24-31.000.
Kucher, Robert C. Tie-down member. 274,303, 6-19-84, Cl. D8-382.000.
Kucher, Robert C. Tie-down member. 274,304, 6-19-84, Cl. D8-382.000.
Kuntz, Raymond. Swivel belt buckle. 274,289, 6-19-84, Cl. D2-405.000.
Kyte, Garrett J. Blank for an adjustable basket filler. 274,311, 6-19-84, Cl. D9-433.000.
Langieri, Michael, Jr.; Yee, Wayne J.; and Steinberg, Howard L., to Milton Bradley International, Inc. Game board. 274,341, 6-19-84, Cl. D21-17.000.
Ledda, Felix J. Container for liquids or the like. 274,307, 6-19-84, Cl. D9-372.000.
Les Parfums de Molyneux S.A.: *See*—
Roger, Maurice H., 274,308, Cl. D9-377.000.
Leviton Manufacturing Company, Inc.: *See*—
Bienwald, Wolfgang F.; and Balaban, David B., 274,325, Cl. D16-32.000.
Lien, Harald; and Rokne, Erling, to Noblikk-Sannem A/S. Can. 274,306, 6-19-84, Cl. D9-368.000.
Lipinski, Casimir H. Collapsible saw horse or the like. 274,365, 6-19-84, Cl. D25-67.000.
Liptak, Richard M., to Integral Design, Inc. Display holder for cards or the like. 274,296, 6-19-84, Cl. D6-140.000.
Lonczak, John: *See*—
Cousins, Michael A.; and Lonczak, John, 274,382, Cl. D32-18.000.
Long, Rubina M.: *See*—
Porter, Harvey; and Long, Rubina M., 274,366, Cl. D25-87.000.
Malamoud, Jean G., to S. T. Dupont. Combined writing instrument and cap. 274,338, 6-19-84, Cl. D19-51.000.
Malamoud, Jean G., to Dupont, S. T. Writing instrument cap. 274,339, 6-19-84, Cl. D19-57.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Sumisha, Hidemichi; and Minamide, Seiko, 274,327, Cl. D14-11.000.
Meisel, Thomas C., Jr.; and Gee, James E., to Caterpillar Tractor Co. Track type log skidding machine. 274,333, 6-19-84, Cl. D15-24.000.
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ISSUED JUNE 19, 1984

NOTE.—First number, class; second number, subclass; third number, patent number

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CLASS 3

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CLASS 4

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DESIGN PATENTS

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55 : 274,361
274,362

PLANT PATENTS

06 : 5,246
5,248

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